

Promoting Foreign Direct Investment in Labor-Intensive, Manufacturing Exports in Developing Countries

Margaret McMillan, Selina Pandolfi, B. Lynn Salinger¹

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¹ *The authors are, respectively, associate professor of economics, Tufts University, Medford, Massachusetts (mmcmilla@emerald.tufts.edu), and economist (spandolfi@aird.com) and senior economist (lsalinger@aird.com) at Associates for International Resources and Development, Cambridge, Massachusetts. The authors would like to thank Lijun Chen, Rebecca Mayer, and Aida Mengistu for excellent research assistance.*

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Abstract

Attracting and increasing foreign direct investment (FDI) is viewed as an important companion strategy to market liberalization, a way of jump-starting labor-intensive, export-oriented economic activity in the absence of sufficiently high domestic savings and investment. This paper seeks to better understand the evolution of global competitiveness trends in the U.S. electronics assembly and clothing industries, with a particular emphasis on the timing and nature of overseas operations and the factors which determine their choice of overseas production or commercial partnership countries.

Results suggest that exports and FDI flows are conditioned by the successive stages of economic development, stabilization, and liberalization which developing countries have experienced since 1980. When a country is in macroeconomic turmoil, interaction with the global market is usually limited to physical export enclaves, where physical and institutional infrastructure can provide targeted incentives to begin to encourage exports and attract FDI. As a country's economy stabilizes, and various forms of trade, market, and currency regime reforms are introduced, broader segments of the economy are redirected toward international markets and FDI begins to flow more broadly throughout the economy. Unless political, social, and legal reforms and infrastructure investments accompany these economic reforms, however, the FDI response will still be limited.

Once all these conditions are met (and they have been by an increasing number of developing countries), survey results indicate that international suppliers of FDI and commercial linkages look closely at qualitative competitiveness issues in deciding where to set up shop. Important among these is the degree to which the local labor force is 'competitive.' This latter concern is not simply a question of cost or wages, but of more qualitative workforce development concerns such as productivity, quality, working conditions, trade-specific skills, and the ability to adapt technologies and innovate the modern processes necessary to interact with the global market.

Promoting Foreign Direct Investment in Labor-Intensive, Manufacturing Exports in Developing Countries

Executive Summary

Export-led economic growth is a development model which offers emerging markets the chance to grow via increased integration with the world economy. In the process of such integration, new jobs are created, incomes are raised, and poverty is reduced. Many developing countries are reforming or have reformed their economic policy environments in order to pursue this model.

Getting policies 'right,' it turns out, does not always insure rapid, positive trade and growth responses from within the local economy and countries in some parts of the world fall further and further behind the growth curve. Thus faith in the credo 'open the doors and export industries will come' is now waning in some corners of the developing world. Their governments are stymied as to the optimal combination of programs complementary to policy reforms that are needed to help promote export-led growth. In this context, attracting and increasing foreign direct investment (FDI) is viewed as an important companion strategy to market liberalization, a way of jump-starting labor-intensive, export-oriented economic activity in the absence of sufficiently high domestic savings and investment. Some countries attempt to lure FDI to their shores by offering tax advantages to prospect firms, others construct export processing zones replete with the latest physical and telecommunications infrastructure, while others may emphasize bonded warehouses or duty drawback schemes to facilitate local companies' access to imported inputs and raw materials.

The goal of the research presented here is to better understand the evolution of global competitiveness trends in certain manufacturing industries, with a particular emphasis on the timing and nature of U.S. firms' overseas operations and the factors which determine their choice of overseas production or commercial partnership countries.

The discussion of FDI in the literature has been fairly aggregate in nature to date. This work starts with the principle that industry-specific insights garnered from firms' perspectives are important for understanding the general flow trends. Our research therefore undertook surveys in the U.S. electronics assembly and clothing industries. These were chosen because of their labor-intensive natures, making their role rather visible in the export expansion experiences of emerging markets over the last twenty years.

Working questions of this research included the following:

- How is the competitiveness profile of specific trade-intensive industries changing in the 1990s with deepening globalization?
- What is the effect of these changes on FDI supply for labor-intensive, export-oriented assembly industries such as electronics, apparel?
- What determines the expansion of these industries into overseas markets?
- What can developing countries do to attract these activities?

Results from the surveys carried out by the authors suggest that exports and FDI flows are conditioned by the successive stages of economic development, stabilization, and liberalization which developing countries have experienced since 1980. When a country is in macroeconomic turmoil, interaction with the global market is usually limited to physical export enclaves, where

physical and institutional infrastructure can provide targeted incentives to begin to encourage exports and attract FDI. As a country's economy stabilizes, and various forms of trade, market, and currency regime reforms, are introduced, broader segments of the economy are redirected toward international markets and FDI begins to flow more broadly throughout the economy. Unless political, social, and legal reforms and infrastructure investments accompany these economic reforms, however, the FDI response will still be limited.

Once all these conditions are met (and they have been by an increasing number of developing countries), our survey results indicate that international suppliers of FDI and commercial linkages look closely at qualitative competitiveness issues in deciding where to set up shop. Important among these is the degree to which the local labor force is 'competitive.' This latter concern is not simply a question of cost or wages, but of more qualitative workforce development concerns such as productivity, quality, working conditions, trade-specific skills, and the ability to adapt technologies and innovate the modern processes necessary to interact with the global market.

Clothing industry findings

Once upon a time, the United States textile and clothing industries were connected by a simple linear industrial chain model. Natural fibers (cotton, wool) were spun into thread and woven or knit into fabric by textile mills, which supplied finished fabric to apparel manufacturers, who sold brand label clothing to retail outlets. The U.S. industry operated in a fairly insular fashion vis-à-vis the global market, with low import penetration levels.

Today, that simple linear model no longer suffices. The fiber and fabric end of the chain has become highly capitalized, in part due to the manufacture of synthetic or man-made fibers (itself an offshoot of the petrochemical industry) and in part due to mechanization of spinning, weaving, and knitting operations which have largely replaced manual labor. These and a variety of other global structural and policy changes have brought about a multiplicity of industrial chain alternatives, which offer many more opportunities for cross-border interactions. As a result, domestic apparel production in the U.S. only accounted for just over one-third of the total wholesale apparel market in 1997. Imports supply nearly half of the market now and outward processing trade, i.e. off-shore assembly of U.S. made components, supplies the remainder. Understanding changes in the structure and behavior of the U.S. clothing industry as it 'goes global' and the international policy environment conditioning that globalization is key to figuring out how developing countries can plug into the seeming bounty of opportunities for them in this field.

Factors driving changes in the industry include technological changes (capital intensification, development of chemicals-based fibers, computerization/automation of spinning, weaving, cutting, and even some assembly operations), revolutions in the transportation and communications sectors, shifts in comparative advantage (shifting patterns of relative factor prices), market competitive forces, and government policy changes have all facilitated the global integration of textile and apparel production.

The implications of globalization for the U.S. industry are several. Markets are now everywhere, there is no 'home' region for a product. The emergence of a 'global consumer' emphasizes the need for mass customization of products and the need for the value-chain to develop specialized information technology to pull the value-chain together. Trading blocs are becoming increasingly important in determining sources of supply (witness the shift in U.S. imports away from Asian and to Latin American sources of supply, due to NAFTA). With global trade liberalization, competition will get fiercer. At the same time, hidden barriers to trade will increase in importance, and retaliation

mechanisms such as anti-dumping and countervailing duties and subsidies will distort trade. Such fights will penalize small countries, which lack the capacity to launch and fight such battles. Supply chain innovations to improve lead times, manage warehousing and shipping costs more efficiently, and cut re-distribution costs become important strategic factors.

There are a number of trends to consider with respect to consumers ultimately driving demand in the clothing industry. Note that there are two large categories of clothing being sold in the U.S. today. 'Commodity clothing,' i.e. standardized sportswear, underwear, and outerwear, is increasingly manufactured abroad in larger run sizes. On the other hand, 'fashion clothing' is being produced in smaller sized runs, in an increasing number of mini-seasons, due to increasingly variable demand. Consumers are also expecting a wider range of retail options (traditional department stores, specialty shops, discounters, factory outlets, catalogues, Internet-based shopping), which is putting pressure on retailing margins. Only designers/merchandisers who can recognize and respond to consumer market demands and recognize evolving product niches will maintain their competitiveness.

Many of the overseas activities of the firms surveyed by AIRD are trade- not investment-based. U.S. apparel firms are often merchandisers who design their product domestically and submit the design either to foreign factories or brokers for manufacture and delivery of the final product. In a few cases, the U.S. firm may operate at the production level in foreign markets through the establishment of local subsidiaries. Some outsourcing takes place from developed countries, such as Italy and Austria, but the developing world is by and large where most foreign suppliers of textile and apparel are located. Most firms monitor potential new markets on a regular basis, especially as labor costs in Asia have been on the rise. While all manufacturers/importers are active in Asia and Latin America, almost none have working relation with sub-Saharan African countries. The general impression is that while production costs in sub-Saharan Africa are lower, longer and less reliable delivery times as well as lower quality of the product do not make up for the difference in final price. Nevertheless, especially in the face of rising production costs in Asia, a very few firms are at least exploring the possibility of dealing with manufacturers in Africa, finding its cost potential quite interesting.

Among the most important factors listed by firms as important in determining their selection of developing country partners are costs, taxes, local labor/management skills, production and marketing infrastructure, regulatory and business environment, U.S. trade relations, and the reputation of the country and local partner firms for things like labor conditions.

Electronics industry findings

The increasingly demanding requirements of global competition are reshaping the structure and nature of competition in the electronics industry. An increasing number of firms is focusing on core competencies, and subcontracting out remaining tasks to more specialized firms. To compete in the electronics industry, technological know-how or 'blue-prints' are no longer sufficient. To succeed these days, firms must also possess exceptional organizational competence, supplier and customer networks, and market intelligence. These capabilities are critical in the electronics industry because of shorter and shorter product cycles and quicker and quicker speed to market. Staying alive means building these capabilities faster and more cheaply than the competitors. This intense and increasingly global competition has led to more opportunities – albeit of an increasingly sophisticated nature – for developing countries.

Traditionally, two types of competitive strategies have been distinguished in the electronics industry. For consumer electronics and electronic components, competition used to center primarily on cost

reduction and judicious pricing. Non-price competition was largely restricted to a few high value-added market niches. In the computer industry, on the other hand, the focus of competition has been on product differentiation, based on proprietary computer designs and market segmentation. This made it possible to separate patterns of competition in the electronics industry by sector, product group, and market segments.

Today, this is no longer the case. In almost every sector of the industry, firms must contend with more complex competitive requirements where price and non-price forms of competition are closely intertwined. In contrast to widespread misconception that electronics products are all differentiated products, this industry covers an extremely broad variety of products that require very intense and continuous interaction between producers and end-users.

Today's competitive environment means that firms have been forced to adapt their organization of production in order to cope with the increase in complexity and risk. Such changes have had far-reaching implications for market structure. There has been a shift from partial to systemic globalization in the industry, characterized by international production networks. U.S. firm organization moved away from traditional integration to network forms of organization, especially Asia-based production networks centered in the China Circle and Singapore.

Such moves had three significant consequences for U.S. firms. First, U.S. firms have been able to relieve the constraining threat of competitive dependence on Japanese firms for a wide range of component technologies and manufacturing capabilities because their Asian production networks became a competitive supply base alternative to Japanese producers. Simultaneously, the networks have helped to lower production costs and turnaround times while keeping pace with rapid technological progress, thereby permitting U.S. firms to pioneer strategies of continuous innovation. Finally, the networks have spawned Asian-based direct competitors to Japanese firms in several of their stronghold markets (e.g., memory chips, consumer electronics, and displays).

Originally, the expansion of American semiconductor firms into East Asia was primarily driven by two concerns: access to cheap assembly hands and the large tariff reductions they could reap by re-importing sub-assemblies from abroad. Over time, this simple concern with short-term financial savings has given way to more complex motivations, building linkages with local suppliers and support industries, while developing an international production strategy that allows them to preempt possible attacks by other firms through rapid cost reduction. The motivation changed again when the U.S. dollar appreciated during the early 1980s. Cash-stripped American semiconductor firms began to experiment with forms of international production that did not necessarily involve equity control. Since then, there has been a proliferation of a variety of international contract manufacturing arrangements. Geographic dispersion now increasingly relies on non-equity forms of international production, i.e. the spread of inter-firm production networks.

An important implication of these trends is that opportunities for developing countries exist but they are not the traditional, labor-intensive manufacturing for export opportunities that once characterized the electronics industry. Export platform FDI is becoming less viable because of increased automation in the computer industry, meaning that cheap labor is no longer sufficient to attract FDI. However, as manufacturing becomes increasingly distinct from innovation and market intelligence activities, many new engineering and manufacturing opportunities present themselves for low-income countries.

Implications for developing country strategies & U.S. trade policy

The spread of global production networks in both the computer and clothing industries could have important positive welfare implications for developing countries. They are likely to facilitate the formation of local capabilities in an increasing variety of markets.

For instance, computer firms now have a vested interest in the development of a regional supply base in Asia. The stakes have been raised and regions now have to compete for investment on a global scale with other regions. If a region has developed a critical mass of specialized capabilities, this is likely to lead to a virtuous circle. Participation in global production networks can thus help the regional cluster establish the missing links to a variety of complementary assets. Equally clear is the fact that those regions that cannot provide such capabilities are left out of the circuit of international production.

Clothing companies now work through a complex web of brokers, overseas subsidiaries and joint ventures, and foreign commercial partners to source apparel items. Some emerging markets in this industry initiated their foray into international markets by pursuing specialized export-oriented institutions, such as export processing zones. In others, those institutions present their own kinds of regulatory complexities today, leading some international companies to prefer working outside those zones in order to get the best priced product. Other developing countries found their access to the U.S. consumer market greatly enhanced when preferential trade arrangements were concluded with the U.S., leading foreign multinational corporations (MNCs) to relocate inside the preferential trade area, bringing their capital and management know-how, lured by the tariff advantages into the final market.

In light of these evolutionary patterns, why are some developing regions of the world still being left out? It would appear there is a minimum acceptable level of infrastructure and political stability required for a country to be considered. In general, countries in Africa do not pass this test. There are a number of countries in Asia, Latin America, and Eastern Europe that do pass this test. Competition among the latter for FDI and for global commercial networking is fierce.

Once the minimum acceptable level of infrastructure and political stability is met, other country-level factors that make a difference include:

- reputation for managerial skill
- skilled labor cost and availability
- degree of entrepreneurship
- reputation for unskilled labor productivity and quality
- enforcement of intellectual property rights
- power of labor unions
- government corruption
- trade relations vis-à-vis the end market(s) of interest

Important factors for choosing a company with which to do business include:

- production capacity
- expertise and quality
- ability to deliver product according to contract terms
- financial strength
- business philosophy

- integrity

Foreign firms need to understand and be prepared to work with or react to the policy and structural factors driving competitiveness of U.S. firms. As competitive pressures drive product cycles down, it is no longer sufficient to offer a low-cost production platform or even such institutional facilitation as export processing zones or tax incentives. Local labor, skilled and unskilled, must be able to respond to the requirements of the global marketplace. Foreign firms are expected to be able to manage input supply channels, respond rapidly to revised design specifications communicated in from overseas or actually handle product redesigns themselves, handle inventories on behalf of the client, deliver with minimal quality flaws, etc. The emergence of a whole new range of qualitative competitiveness variables to which developing countries must now pay attention as they compete among themselves to attract FDI, means that labor workforce training at all skill levels is becoming essential.

Finally, insights emerging from this work also suggest that U.S. policy makers *in the U.S.* can enhance the ability of developing countries to take advantage of global production network opportunities. For instance, U.S. policy makers could enhance foreign direct investment and global commercial initiatives by a broader range of U.S. firms abroad by recognizing manufacturing industries (such as textiles/apparel) as truly global endeavors, instead of just viewing them as 'U.S. strategic interests' and feeling obliged to defend import substitution interests. U.S. MNCs which manufacture abroad need to know that their exports back into the U.S. market will not be penalized by tariffs or sudden imposition of quotas when import levels suddenly become non-insignificant.

U.S. policy makers can also facilitate overseas investment and operations by helping to forge an international consensus regarding international labor codes of conduct. While the U.S. development community promotes broad-based or labor-intensive economic growth, lack of agreement on labor relations in low wage countries leaves U.S. firms open to consumer attack and even lawsuits when they import from 'sweatshops' overseas.

A third area where U.S. policy makers can be helpful is in providing preferential access to the U.S. market for our most vulnerable trade partners overseas. While the Clinton Administration has been lobbying for some variation of the *Africa Growth and Opportunity Act* to be passed by the U.S. Congress, the meat of the bill of interest to African exporters, i.e. the promise of duty-free, quota-free access to the U.S. market for African textile and apparel exporters has been strongly resisted by the U.S. industry. Including outward processing trade requirements, so successful in the context of Caribbean and NAFTA trade growth, in the African trade bill is viewed by most U.S. importers as not terribly workable vis-à-vis more distant African countries.

Finally, U.S. policy makers should adopt a consistent attitude with respect to international trade liberalization. While the Clinton Administration has been energetic in pursuing completion of follow-on agreements to the Marrakesh Agreement which concluded the Uruguay Round, there is uneasiness in some official quarters with respect to technical assistance for trade negotiations training in developing countries. Such incoherent thinking belies our commitment to real global trade liberalization.

Promoting Foreign Direct Investment in Labor-Intensive, Manufacturing Exports in Developing Countries

Introduction

Export-led economic growth is a development model which offers emerging markets the chance to grow via increased integration with the world economy.² In the process of such integration, new jobs are created, incomes are raised, and poverty is reduced (Roemer and Gugerty, 1997; Stryker and Pandolfi, 1997). This is in contrast to the import substitution strategies that tended to dominate national development planning in most Latin American, African, and Arab countries following decolonialization. Many developing countries are now reforming or have reformed their economic policy environments in order to pursue the outward-oriented model.

To the extent that this export-led growth is labor-intensive, it is assumed that it will also be 'pro-poor' and thus give a marginally greater boost to raising the welfare of the most vulnerable portion of developing countries' populations. The World Bank generally defines a 'pro-poor' program as one emphasizing activities which promote labor-intensive employment and thus increase incomes of the poor. This depends, of course on how much labor-intensive employment is generated relative to other activities, on what happens to wage rates, and hence the share of new income accruing to the poor. Binswanger and Landell-Mills (1995) describe a host of policies that can be used to promote broad-based, employment-intensive growth. These include reduction or elimination of anti-employment biases in trade policy, market regulation, the tax regime, labor laws, and financial sector policies. Yet problems are indicated in linking this pro-poor conceptualization to the design and implementation of employment- or labor-intensive growth strategies.

Getting policies 'right,' it turns out, does not always insure rapid, positive trade and growth responses from within the local economy and countries in some parts of the world fall further and further behind the growth curve. Thus faith in the credo 'open the doors and export industries will come' is now waning in some corners of the developing world. Their governments are stymied as to the optimal combination of programs complementary to policy reforms that are needed to help promote export-led growth.

In this context, attracting and increasing foreign direct investment (FDI) is viewed as an important companion strategy to market liberalization, a way of jump-starting labor-intensive, export-oriented economic activity in the absence of sufficiently high domestic savings and investment. FDI inflow into developing countries is viewed as something to be encouraged, the jumper cable for stalled economies in need of additional capital resources. Moreover, it is increasingly understood that FDI brings with it a host of positive externalities for developing country businesses, such as access to global technologies, ways of doing business, and market connections, the spread effects of which will further propel the country toward successful integration with global markets. FDI thus encourages product and process innovations by existing domestic firms.³

² The terms "emerging markets" and "developing countries" will be used interchangeably in this paper.

³ Irene Bertschek, "Product and Process Innovation as a Response to Increasing Imports and Foreign Direct Investment," *Journal of Industrial Economics* 43,4 (December 95): 341-357.

In order to better understand the constraints facing developing countries in their quest for increased FDI, the Consulting Assistance on Economic Reform project has funded three companion studies, whose objectives are to identify the complementary factors, programs, and activities that are the hallmarks of successful efforts to promote export-oriented FDI. Two of these, led by the Harvard Institute for International Development, are exploring the range of experiences with policy reforms-cum-export platform institutions which has generated sustained export growth and thus economic expansion for certain developing countries⁴ and the range and implementation of tax incentives offered by developing countries in order to attract FDI.

The goal of the third piece of the research, the focus of this report, is to better understand the evolution of global competitiveness trends in certain manufacturing industries, with a particular emphasis on the timing and nature of U.S. firms' overseas operations and the factors which determine their choice of overseas production or commercial partnership countries. The discussion of FDI in the literature has been fairly aggregate in nature to date. This work starts with the principle that industry-specific insights garnered from firms' perspectives are important for understanding the general flow trends. Our research therefore undertook surveys in the U.S. electronics assembly and clothing industries. These were chosen because of their labor-intensive natures, making their role rather visible in the export expansion experiences of emerging markets over the last twenty years.

Working questions of this research included the following:

- How is the competitiveness profile of specific trade-intensive industries changing in the 1990s with deepening globalization?
- What is the effect of these changes on FDI supply for labor-intensive, export-oriented assembly industries such as electronics, apparel?
- What determines the expansion of these industries into overseas markets?
- What can developing countries do to attract these activities?

The research team used a combination of literature reviews from economics, business, and industry specific sources; informational interviews with trade or professional associations; and firm surveys to gather qualitative information on overseas investment and operations decisions. The surveys were pre-tested or shared with industry experts whose feedback was incorporated into a revised survey design.⁵ Surveys were mailed out to samples of 100+ firms in each industry, targeting senior executives in charge of international investment and sourcing strategies.

A cover letter accompanying the survey told firms that their assessment of the nature and timing of their firms' overseas operations and the priorities they ascribed to various factors in choosing among alternative partners, together with those of other leading executives, would be aggregated to provide us with information to help facilitate future investments and commercial relationships in developing countries. In addition, their practical business experience was sought in order to provide insight into

⁴ The CAER I project funded earlier work in this area, assessing the impact of the costs of institutional constraints in Ghana and Madagascar to export expansion on comparative advantage. See Dirck Stryker et al., *Costs and Benefits of Eliminating Institutional Constraints on the Expansion of Nontraditional Exports*, prepared for the U.S. Agency for International Development (Cambridge, MA: Associates for International Resources and Development, October 1994).

⁵ In the case of the electronics industry, McMillan worked with N-Able Group, a California-based electronics industry consulting group, while in the case of the clothing industry, Salinger and Pandolfi were assisted by the U.S. Association of Importers of Textiles and Apparel (USA-ITA) in New York.

the ways in which developing countries can gradually and successfully improve their climate for foreign investment and partnership. In return for their collaboration, participants were promised a copy of this report.

FDI Flows and Determinants

Breakdowns and patterns of flows

Foreign direct investment is one component of private capital flows. It is the direct equity investment made to acquire a lasting management interest, considered to be 10 percent or more of voting stock, in an enterprise operating in a country other than the one of the investor. If the acquired stock is less than 10 percent of the voting one, the operation is considered to be a portfolio equity investment.⁶ FDI and portfolio equity investment comprise non-debt private flows, while debt private flows include commercial lending, bond, and other private credits. The sum of non-debt and debt private flows totals private capital flows.⁷

After a brief period of stagnation in the late 1980s and early 1990s caused by global recession, FDI flows regained momentum in 1993. Overall growth rates increased from 1 percent in the period 1988-1992 to 24 percent in 1993, 9 percent in 1994, and 40 percent in 1995.

The greatest share of FDI flows is attributable to developed countries (about 60 percent of inflows and 80 percent of outflows in the period 1993-1995). Still, FDI to and from developing countries is recording a significant growing trend, indicating the increasing level of globalization of those economies. Growth rates of inflows were 45 percent in 1993, 19 percent in 1994, and 15 percent in 1995, while outflows from developing countries grew respectively in these years at 52 percent, 17 percent, and 22 percent (UNCTAD, 1996).

Table 1: External Financing to Emerging Markets

(billions of \$)	1995	1996	1997	1998 ^e	1999 ^f
Net external financing	269.8	332.4	299.5	194.0	174.4
Net private flows	228.9	327.7	262.8	143.3	140.9
Equity investment	105.7	129.0	141.8	122.9	124.8
Direct equity	81.3	93.3	116.1	120.4	103.3
Portfolio equity	24.4	35.7	25.7	2.4	21.5
Private creditors	123.1	198.7	121.0	20.4	16.1
Net official flows	40.9	4.7	36.7	50.8	33.5

Notes: e estimate; f IIF forecast

Source: Institute of International Economics (1999)

FDI in developed countries, both in the form of out- or inflows, is increasingly taking place through mergers and acquisition, concentrated mainly in pharmaceuticals and services (particularly the

⁶ For accounting purposes, FDI is the sum of equity capital, re-investment of earnings, and other long-term or short-term capital as shown in the balance of payments accounts.

⁷ FDI is not the only way in which enterprises carry activities across countries. Multinational corporations, i.e. firms that control assets in two or more countries, are considered to be the highest profile institutional vehicles that allow for the interaction between developing countries and the world markets. While part of their activities can be qualified as FDI, they operate also through non-FDI activities such as trading goods and services, licensing agreements, franchising, management and turnkey contracts, and sub-contracting (Helleiner, 1989).

banking and finance industry), as a result of the spread of privatization efforts and regional integration agreements such as NAFTA, MERCOSUR, etc.

The trend in developing countries is quite different. Only about 10 percent of worldwide mergers and acquisitions takes place in developing countries and, of these, almost all are concentrated in a few Latin American countries. FDI to developing countries constitutes a substantial share of total net private capital flows to these economies, about 54 percent in 1995. Its significant role is exemplified by the fact that portfolio equity investment in such countries (with the exclusion of Latin America and the Caribbean) fell by half from its peak in 1993-1995, but total private flows in the same period increased (UNCTAD, 1996).

The largest amounts of capital flows are generated by the developed economies. In 1996 developed countries' investments abroad peaked at about \$295 billion, the largest shares of which (78 percent) were supplied mainly by the United States, Japan, and the European Union (WIR, 1997). The United States has been traditionally the largest supplier of FDI (35 percent), while the second largest donor, the U.K., has accounted for about 16 percent.

Since the early 1980s the largest share of capital outflows from the U.S. (almost half) has been directed to the services sector – which includes wholesale trade, banking, finance, insurance, real estate, and other services – followed, though at quite a distance, by flows to the manufacturing sector (28 percent).

Half of U.S. capital flows has been directed to Europe, mostly countries members of the European Union. U.S. flows to countries other than Europe have mainly been directed to Latin America and the Asia and Pacific region (including Japan). Flows to developing countries – Latin America and Asia, excluding Japan – represented in 1995 only about 27 percent of total outflows from the U.S. (WIR, 1997). In 1997 flows to Latin America accounted for about 44 percent of all flows to non-European countries, flows to Asia and the Pacific about 25 percent, to the Middle East 2 percent, and to Africa 7 percent.

Looking specifically at U.S. outflows to the manufacturing sector broken down by region – with the exclusion of Europe – it is clear that the more neglected regions have been Africa and the Middle East, while most of the capital flows in this industry have been directed to Latin America and East Asia. An interesting insight on the effects of NAFTA on the Latin America region is provided by the fall of U.S. capital flows to the Caribbean starting in the mid 1990s, paralleled by a sharp increase in flows in the same period to Central America (which includes Mexico).

As a result of increasing economic liberalization and sustained economic growth, FDI to developing countries reached an impressive \$100 billion in 1995, although its distribution across economies has been quite uneven.

In 1995 Asia received about 68 percent of all FDI inflows to developing countries. About 40 percent of these flows are from intra-regional sources, well above any share from Europe, the U.S., or Japan. There is also uneven distribution of FDI inflows at the regional level. China accounted for 58 percent of the region's inflows, although the increase in inflows was recorded throughout most of the region as well (UNCTAD, 1996). Notwithstanding an increase in the absolute level of FDI, inflows to ASEAN countries – as a share of total inflows to South, East, and South East Asia – have been decreasing since the early 1990s, mainly due to loss of competitiveness in relation to other economies in the region. South Asia, in particularly India, has instead experienced an increase in its

share of inflows in Asia. This appears to be mainly the result of increased flows from other Asian economies, especially from Korean firms. FDI to Hong Kong was mainly recorded in the service industry, while most of the FDI received in Korea, Singapore and Taiwan is in the electronics industry. The rise in FDI in this region also appears to reflect a sharp increase from European countries, promoted by several initiatives of the European Commission. Intra-regional FDI has also been increasing substantially, due to liberalization policies and incentives for investment within the region on the one hand, and ethnic and cultural links on the other.

FDI flows to Latin America and the Caribbean represented in 1995 about 27 percent of total FDI inflows to developing countries, and about 30 percent the following year. In this region, as in Asia, FDI inflows are quite unevenly distributed. In 1995 Mexico represented the largest recipient, with about 26 percent of total inflows to the region. Together with Brazil, Argentina, and Chile, these four countries received about two-thirds of such inflows (UNCTAD, 1996). In 1996 inflows of FDI to Brazil reached more than \$10 billion, making the country the largest single recipient in the region. Concerns about the stability of such investments have been raised, however, given the concentration of FDI inflows either in very few and specific industries (automobiles and natural resources) or driven by privatization policies. The latter trend seems to be reversing slightly. In 1996 FDI attributable to privatization fell to about 25 percent from 50 percent in 1993 (UNCTAD, 1997). FDI into Latin America is mainly flowing from the United States (58 percent of the total in 1990-1995), particularly in Brazil, followed by Europe (39 percent) and Japan (13 percent). Intra-regional investment is also increasing as a result of the southern regional trade scheme, MERCOSUR.

Africa, the smallest recipient of FDI inflows, received only about 3 percent of all flows in 1997. Since the early 1980s great efforts have been made in terms of policy reforms and bilateral investment treaties in order to attract more FDI, and, indeed, absolute values of FDI flows to the region have been increasing in the last decade (World Bank, 1998). A disturbing trend, however, is that the share of developing country FDI inflows going to Africa appears to have actually decreased, from 11 percent in the period 1986-1990 to less than 5 percent in the period 1992-1996 (UNCTAD, 1997; UN/ECA, 1999). This relative decline, which Latin America and the Caribbean have also experienced albeit to a lesser extent, is partly due to a steep increase in the absolute level of FDI inflows to China. Absolute levels of FDI into Africa, on the other hand, have in fact increased by 500 percent between 1975-80 and 1990-96. Moreover, data shows that the share of inward FDI stock to GDP is about the same in Africa and in Western Europe, about 13 percent.

As per the other developing regions, FDI flows into Africa appear to be quite unevenly concentrated by country at a sub-regional level. Nigeria accounted in 1995 for about 60 percent of the flows to sub-Saharan Africa (SSA), while in North Africa Egypt received about 48 percent of flows to that sub-region in the same period. The trend for the whole region, though, has been one of de-concentration. During the 1980s, for example, most FDI stock (60 percent) was concentrated in southern Africa, while in 1995 the sub-region share was reduced to 24 percent, mainly because of disinvestments in South Africa and a shift of resources to North Africa. Payments of royalties and fees to foreign companies are still highly concentrated in southern Africa, mostly in South Africa, although a light reversing trend has been identified in this area as well (93 percent in 1980, 86 percent in 1995). Sources of FDI into Africa are also highly concentrated. In 1993 Western European firms held about 56 percent of combined sales volume and assets of local firm affiliates with foreign ones (and U.K. and France accounted for about 80 percent of total Western Europe investment in Africa) (UNCTAD, 1996).

The Asian financial crisis introduced significant instability into these flows. According to the Institute of International Finance (IIF), net private capital flows to emerging market economies fell from \$330 billion in 1996 to \$143 billion in 1998, with a slight fall-off expected in 1999. FDI, representing over 70 percent of net private capital flows to emerging markets, is also expected to fall, while the much smaller share of flows which is portfolio equity investment will rebound. IIF estimates are indicated in Table 1 below. Not unexpectedly, flows to China and Brazil have been particularly affected. UNCTAD reports that FDI flows to developing Asia in 1998 experienced a modest decline, due almost entirely to sharply decreased flows into Indonesia and Taiwan (UNCTAD, 1999). Direct investments in some areas of Asia, notably South Korea, are beginning to resume again, however.

Attracting FDI in stages

It is useful to consider the successive stages of economic development, stabilization, and liberalization which developing countries have experienced since 1980 and how these stages condition the form of the country's relationship with exports and attracting FDI.⁸

Macroeconomic stabilization and export enclaves

Many developing countries have experienced severe budget, current, and capital accounts disequilibria over the last twenty years. Macroeconomic stabilization is usually the first stage of reform to redress these imbalances. Under such conditions, trade regimes and price incentives are usually greatly distorted, resulting in higher domestic costs of manufacturing, relative to world prices. Export interaction with the global market is therefore usually limited to physical export enclaves, such as export processing zones (EPZs). Here, even if the broader economy is still operating as an import-substitution economy behind high tariff protection barriers, physical and institutional infrastructure can provide targeted incentives to compensate for heavy import taxation and/or domestic currency overvaluation, thereby encouraging exports and beginning to attract FDI.⁹

In their analysis of the determinants of trade, growth, and investment in sub-Saharan Africa, Stryker and Pandolfi (1997) find that FDI appears to be quite sensitive to the soundness of the macroeconomic environment of developing countries. Overall, countries that have greater fiscal surpluses experience higher inflows of FDI, though this relation is not very significant. This may be an indication of the signals sent out to foreign investors by the government's fiscal situation. In addition, a strong legal and administrative environment is critical for inducing FDI, though the effect is much less pronounced in SSA, where investment in enclave natural resource based industries is common. Possibly due to better information, more sophisticated financial instruments,

⁸ These are necessarily stylized here.

⁹ Global factors (also called 'push' factors), consisting mainly of movements of global interest rates and macroeconomic policies in the developed countries have also affected FDI flows (Fernández-Arias and Montiel, 1995). A sharp decline in the level of U.S. interest rates in the late 1980s, for example, resulted in outflows on capital from the U.S. to, among others, developing countries. Rising factor of production costs, local legislation, and tax policies also can motivate a country to redirect its investment abroad rather than domestically. Fernández-Arias and Montiel (1996) argue subsequently that it would be inappropriate to dismiss the role of factors determined by the developing countries themselves (so-called 'pull factors'). They suggest that is quite hard to measure properly pull factors. Policies oriented to macroeconomic stability are in fact several and very distinct from each other, and it is quite difficult to assume a proxy for those that has the same level of reliability of interest rates for push factors. On the other hand, an analysis of push factors should take into account the change in the composition of FDI, both in terms of the degree of financial integration (equity vs. portfolio) and of the change in the return of such investment. The authors suggest that push and pull factors are each necessary but not sufficient conditions in determining capital flows.

and a richer economic global environment, FDI has been growing in the 1990s, and, after taking all of the above into account, it has been greater in SSA than in other regions of the world.¹⁰

On the structural side, Stryker and Pandolfi find that there is some tendency for the relationship between FDI/GDP and population size to be negative in Africa and positive in the rest of the world. In other words, while generally larger markets attract higher levels of FDI, the opposite is true for African countries. This is probably indicative of Africa's greater dependence on production of primary product exports for the world market.

Their results also suggest that more densely populated countries have relatively higher levels of FDI. This may be an indication that investors are oriented primarily toward production of manufactured goods for export, since high population density normally means lower labor cost and better infrastructure. Trade also appears to play an important role in stimulating FDI, though the direction of causation is not entirely clear.

Trade and market reform and broader export/FDI incentives

As a country's economy stabilizes, various forms of structural and sectoral adjustment, notably trade, market, and currency regime reforms, are usually introduced. These help to bring domestic cost structures in line with international references and make it possible for broader segments of the economy to redirect themselves toward international markets. Export promotion is no longer limited to physical export enclaves, but rather can now be accomplished by a range of incentives programs, broader institutional arrangements that aim to compensate for lingering biases in customs institutions, trade tax structures, etc. Part of such liberalization is the harmonization of trade codes and standards by the developing country with those of the international community, usually facilitated by joining the World Trade Organization and sister bodies. Regional or preferential trade arrangements linking the developing country to major consumer markets may also attract investment funds. FDI is now encouraged not only into EPZs, but more broadly throughout the economy.

Stability, rule of law, and modern physical infrastructure attract increased FDI

However, unless concomitant institutional reforms are forthcoming, the FDI response will still be limited. Investors need assurances that political, social, and legal reforms will yield general stability and the enforcement of rules of law in commercial and other spheres.

Wilhelms (1998) finds that economic policies aimed at the liberalization of trade and investment have a strong positive influence in attracting FDI to those countries, controlling for structural variables such as market size. Wilhelms' analysis shows that countries which have pursued open policies, i.e. present limited trade restrictions and exchange rate distortions and where the rule of law is strong and corruption limited, have indeed experienced higher levels of foreign direct investment. At the same time GDP per capita is negatively correlated with FDI levels, suggesting that developing countries attract relatively more capital flows, presumably because of higher rates of return on such investment compared to the developed world. The existence of credit access within the developing economies appears also to have a positive impact on FDI, creating an incentive for those firms that might not have access (or have limited access) to domestic credit for FDI operations. The analysis also shows high levels of taxation result in lower levels of FDI, since a rigid and demanding fiscal environment will increase the costs of business activities. Wilhelms' analysis did not find any

¹⁰ In a multivariate regression seeking to estimate capital flows, the regional dummy variable for sub-Saharan Africa had a significant, positive coefficient, i.e. *ceteris paribus*, controlling for all other factors determining FDI, the levels of FDI into sub-Saharan Africa are higher than elsewhere.

significant explanatory power in regional dummy variables, suggesting that it is differences in the levels of the above factors that explain the unequal distribution of FDI across developing countries rather than cultural or geographical elements.

Singh and Jun (1995) also show that sociopolitical stability has a positive impact on capital flows. Since sociopolitical stability is quite a complex phenomenon, a variety of proxies were used in their regression estimates, and different proxies yielded different results. In their study the authors find that instability measured in terms of loss of work days in production is a significant obstacle to capital inflows to those countries that are already experiencing low levels of FDI. This might be explained by the fact that investment in those economies is presumably more directed toward labor intensive activities. Alternatively, a political risk index which includes indicators of the degree of social fragmentation within a country, the country's relationship to outside hostile powers, and the occurrence of social unrest appears to be significantly negatively related to capital flows to countries that receive large amounts of FDI. These countries probably experienced FDI directed towards capital intensive activities, which are more sensitive to longer-term stability issues.

Singh and Jun look in the analysis at the impact of the stability of the business environment and of export orientation on capital flows. Their results show that while greater taxes on trade do not seem to have a detrimental impact on FDI, a more general index indicating the general business climate – which includes factors such as economic, growth, monetary policies, contract enforceability, bilateral treaties, etc. – is significantly related to capital flows. Finally export orientation, in particular for manufacturing sector, is an important determinant of FDI, i.e. FDI flows follow exports.

Modernization of infrastructure (e.g., air and sea ports, telecommunications, rail and road linkages, banking regimes) is also crucial if trade and FDI are to be encouraged. As real transport and telecommunications costs have fallen in absolute terms and relative to the final value of output, firms are increasingly indifferent regarding locational decisions (Cairncross, 1997). To the extent that liberalization of transport and telecommunications regimes occurs and brings down their costs in some parts of the world but not others, those countries with persistent high infrastructure and utility costs and cumbersome regimes will be viewed negatively as potential FDI recipients, relative to other parts of the world with more modern facilities. Thus, countries with poor road/rail infrastructure to air and seaports, which maintain international air transport monopolies, whose ports do not operate efficiently, or in which telecommunications links to international suppliers and clients are costly and/or unreliable will fall behind in attracting export-oriented industries to their shores. As confirmed by our surveys, many countries in sub-Saharan Africa are still perceived as failing to meet these criteria, as well as some of the more basic stabilization and liberalization criteria above, thus hindering their ability to attract export-oriented FDI.

Qualitative competitiveness: Importance of workforce development

Today many developing countries have achieved comparable levels of macroeconomic stability, openness to trade and trade harmonization, sociopolitical stability and rule of law, and physical infrastructure upgrading. With these preconditions met, our survey results indicate that international suppliers of FDI and commercial linkages now look more closely at qualitative competitiveness issues in deciding where to set up shop.¹¹ Important among these, especially for manufacturing industries which still rely on a fair amount of assembly labor, is the degree to which the local labor force is 'competitive.'

¹¹ See Porter (1990) for his distinctions between comparative advantage and competitiveness analyses. Salinger (1998) discusses these distinctions in terms of quantitative and qualitative competitiveness factors.

'Competitive' used to mean an exclusive focus on cost, captured by traditional comparative advantage analysis. The Heckscher-Ohlin international trade theorem explains international trade flows in terms of relative factor endowments and thus costs. Industries with low capital equipment investment and minimal skilled labor requirements, traditional examples of which are found in apparel manufacture and electronics assembly, are said to be acutely sensitive to unskilled labor costs, such that a rise in wages in one country may lead to displacement of manufacturing to a lower labor cost platform. This transplantation is done relatively easily, given that large production infrastructure is not required, and is especially attractive when an EPZ with excess capacity is available in the new country to provide a newly arrived firm or joint venture operation with the required physical and export infrastructure. Because of such ease, such industries are sometimes referred to as 'footloose' (Caves and Jones, 1985, 150-160).

Footloose industries were thus hypothesized to be the first kind of export industries transplanted into a developing country, where the capital assets and advanced infrastructure required to support more sophisticated industries are scarce. They were therefore of particular interest to this study as it sought to unravel the determinants of export-oriented capital inflows into emerging markets. Moreover, since developing countries have a distinct comparative advantage with respect to cheap labor, the theory goes, they must have an easier time in attracting FDI for these 'footloose' industries and a focus on attracting FDI into these kinds of industries is hypothesized to be an important element in the design of developing countries' strategies for increasing FDI.

However, survey results confirm that cost is not the only labor issue of interest to international companies and potential investors. In speaking to electronics and apparel manufacturers in the U.S., this study has confirmed that MNCs also evaluate labor productivity, quality, and the business- and trade-specific skills of both management and labor in deciding where to invest. Given two equally low labor cost economies, a firm will choose the one in which it must spend the least training dollars. As international consumers' awareness of labor issues increases, MNC management must also consider minimum work ages, length of work hours, the 'fairness' of wages, and work shop conditions in the particular country in which they seek to do business, even if only as a commercial partner, i.e. not as a direct investor.

Economic growth functions readily measure the contribution of capital and labor to economic growth. They are less adept, however, at discerning the individual contributions of physical (such as machinery and technology) versus human capital (education, skills, entrepreneurship), largely because data proxies for the latter are so hard to come by.¹² Yet as the 1995 World Development Report recognized, "increasing the skills and capabilities of workers is key to economic success in an increasingly integrated and competitive global economy" (World Bank, 1995; 36). Basic human capital investments in primary education (literacy and numeracy) and nutrition are but one piece of a more complex labor market puzzle. Countries in which workers *and* managers can demonstrate a wide range of advanced skills will prove to be more competitive in attracting production and commercial network linkages and FDI than countries which cannot.

Among the skills required to be internationally competitive today, the workforce needs to be able to operate in on-the-job work environments, manage complex tasks, organize the work of others, adapt international technologies to local conditions, communicate effectively, show initiative, provide

¹² See the writing of Paul Romer on this topic, e.g., "The Origins of Endogenous Growth," *Journal of Economic Perspectives* 8 (Winter 1994): 3-22.

quality work and service, and facilitate linkages to global markets. *Ceteris paribus*, therefore, a firm choosing between two countries with similar cost structures as well as policy and regulatory environments will opt for the one which offers the most capable workforce.

The 1995 World Development Report also notes that for investments in human capital to be realized, the appropriate incentive structure must be in place to allow firms to take advantage of the education and skills of the available workforce. Only then will firms be willing to make the on-the-job investments in training which necessarily must complement the schooling workers have received. The World Development Report also notes great variability with respect to the amount of worker training in which a firm is willing to invest, determined by the degree of export orientation, the pace of technological change, the existing education level of the workforce, economic cycles, and growth prospects of the industries in which they operate.

Ernst, Ganiatsos, and Mytelka (1998) suggest that a key determinant of success in expanding exports has to do with small and medium sized developing country firms' abilities to continuously and iteratively develop new technological capabilities. They stress that this process is less about acquiring or leasing formal technology per se than it is about mastering the myriad of process innovations which must be made by firms with respect to internal organization,¹³ interaction with foreign buyers and suppliers, production processes, research and development, marketing, etc. as they adapt their businesses to the rigors of the international marketplace. Ernst et al. also point out that while the initial export success of Taiwan, Korea, Thailand, Indonesia, and Viet Nam may have been based on labor cost advantages, firms' abilities to upgrade to higher value product niches, diversify their markets, and eventually contribute much more in the way of design, organizational, and other capabilities, became an important new source of international competitiveness.

This view of developing country firms as responsive partners in the global marketplace stands in distinct counterpoint to the image of Third World company passively offering up its workforce for exploitation by MNC firms. Rather, it opens the possibility that increased integration in the global marketplace, when implemented with a view to flexible specialization (i.e. firms innovating in response to market pressures), can lead to the accrual of rising prosperity for developing country labor (Piore and Sabel, 1984).

The U.S. Clothing Industry Shops Overseas

Once upon a time, the United States textile and clothing industries were connected by a simple linear industrial chain model. Natural fibers (cotton, wool) were spun into thread and woven or knit into fabric by textile mills, which supplied finished fabric to apparel manufacturers, who sold brand label clothing to retail outlets. The U.S. industry operated in a fairly insular fashion vis-à-vis the global market, with low import penetration levels (through the 1970s, below 5 percent for textiles and below 10 percent for apparel).¹⁴

¹³ With respect to assembly operations, such incremental process innovations may be linked to gender relations on the shop floor, as revealed by survey work undertaken recently in South African clothing firms where women production managers seem more willing to experiment with variations on assembly operations and work organization in tandem with their female work forces than their male manager counterparts, especially in smaller firms (Flaherty and Salinger, processed).

¹⁴ Dickerson (1995), from Cline (1987).

Today, that simple, linear model no longer suffices. The fiber and fabric end of the chain has become highly capitalized, in part due to the manufacture of synthetic or man-made fibers (itself an off-shoot of the petrochemical industry) and in part due to mechanization of spinning, weaving, and knitting operations which have largely replaced manual labor. These and a variety of other global structural and policy changes have brought about a multiplicity of industrial chain alternatives, which offer many more opportunities for cross-border (and often, intra-firm¹⁵) interactions. As a result, domestic apparel production in the U.S. only accounted for 39 percent of the total wholesale apparel market in 1997. Imports supply 46 percent of the market and outward processing trade (see below) supplies the remaining 15 percent. Despite these trends, the U.S. textile and apparel industries are represented by strong associations which lobby the U.S. government for policy preferences on the basis of their (now outdated) images as import substituters.¹⁶ Even the Department of Commerce's Office of Textiles and Apparel takes a fairly U.S. market-centric view of the industry. These organizations stand in marked juxtaposition to textile and apparel importers,¹⁷ who take a more global view of the marketplace.

Understanding changes in the structure and behavior of the U.S. clothing industry as it 'goes global' and the international policy environment conditioning that globalization is key to figuring out how developing countries can plug into the seeming bounty of opportunities for them in this field.

Evolving patterns of production

The industrial chain for textiles and apparel is complex, involving the manufacture and marketing of a range of natural and synthetic fibers, yarns, fabrics, apparel, and home textiles (carpeting, upholstery, draperies, bedding, etc.). Spinning, weaving, knitting, cutting, assembly, finishing, distribution, and retail activities employed nearly 2.5 million U.S. workers at the peak of the industry in 1970. Today, employment is down by 38-40 percent in both textiles and apparel manufacturing, according to the Bureau of Labor Statistics.

What has driven this shedding of labor? For one, *technological changes* have led to substantial evolution in the industry. The textile industry, once a labor-intensive industry producing natural fibers (cotton, wool, and others) and fabrics, has evolved into a capital-intensive chemicals industry off-shoot producing synthetic fibers (man-made fibers, or MMF) in ever increasing proportion. In the U.S. today, consumption of MMF exceeds that of natural fibers, reflecting the importance of the former in household and industrial textile goods manufacture, in addition to apparel. The apparel industry is also undergoing significant technological change. Innovations introduced in the apparel industry have led to substantial *computerization/automation* of spinning, weaving, cutting, and even some assembly operations.

In addition, *revolutions in the transportation and communications sectors* have made it possible to communicate globally in ways unimaginable just ten years ago, allowing global production linkages to be forged wherever such systems function efficiently.

¹⁵ In assessing the range of new trade opportunities for Africa, Salinger, Amvouna, and Savarese (1998) underscore that evolving and burgeoning trade between emerging and mature markets is increasingly a function of complex production relationships across production platforms (countries) by different divisions of multinational corporations.

¹⁶ The American Textile Manufacturers Institute and the American Apparel Manufacturers Association.

¹⁷ Represented by USA-ITA, whose membership includes U.S. manufacturers, retailers, brokers, and transporters.

Shifts in comparative advantage, or shifting patterns of relative factor prices, also explain the rise and demise of textiles and clothing manufacture, not only in the U.S. but in Japan, Korea, and elsewhere around the world. As explained by Heckscher-Ohlin trade theory, as labor costs rise relative to capital costs, the focus of industry shifts from labor-intensive to capital-intensive activities and a country will increasingly import the former and export the latter. In addition, labor-intensive manufactures tend to be exported from developing countries which not only have ample supplies of low-cost labor, but which are also natural resource-poor. Park and Anderson (1991) demonstrates how these successive patterns of textile and clothing industry development have been followed in the United Kingdom, Japan, and the newly industrializing countries (NICs) of northeast Asia (South Korea, Taiwan, Hong Kong, China).

Competitive forces have introduced enormous change at the retailing end of the chain (Jones, 1998). Some organizational alternatives for industrial chains are sketched in the chart on the following page. As a result of these changes, the U.S. consumer has a broader range of choices available today. No longer is apparel manufacture driven solely by brand label designers (traditional chain). Instead, innovations in retailing formats have led to the establishment of discount clothing lines (variation #1) or 'private label brands,' i.e. store labels (variation #3). Moreover, concentration of market power at the retailer end of the chain also means that they determine inventory management practiced by suppliers. This, in turn, makes just-in-time delivery an important competitiveness factor.

Policy changes in the international trading regime in response to, or in the face of, these other factors, have facilitated the global integration of textile and apparel production. As textile mills have taken the commercial lead in the development and production of specialized fabrics (variation #2) or fibers (variation #4) (Polartec fleece is one current example), and outward-processing trade (below) conveys trade tax advantages to off-shore assembly ('cut, make, trim' as it is known in the business), mills have in some instances become as important as brand-label apparel companies in supplying retailers directly. Endless variations on the traditional industrial chain exist today, with linkages moving up and down the chain, connecting international suppliers and markets in countless ways.

Evolving patterns of international trade

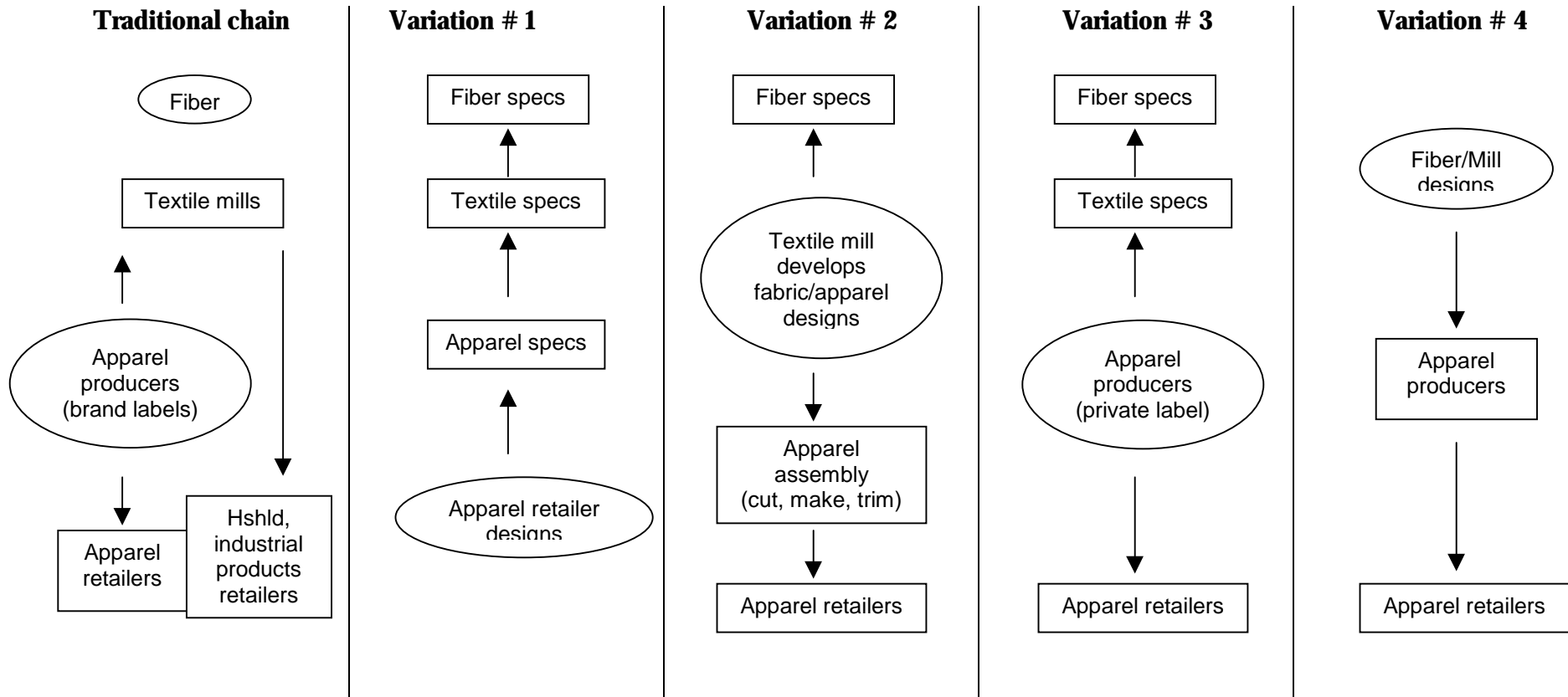
As explained above in the context of shifting comparative advantages, U.S., European, and Japanese producers are abandoning high cost, domestic manufacturing and moving to lower cost production platforms in developing countries where cheaper wages are available. Even the NICs of northeast Asia have had this experience. As wages rose in Korea, for example, Korean manufacturers sought off-shore assembly platforms in Bangladesh, Indonesia, and elsewhere. Thus over time, certain developing countries have experienced increased global linkages to textile and clothing industries around the world. In the U.S., for example, clothing firms have moved some or all of their assembly operations overseas to the Pacific Rim and to NAFTA/Caribbean countries.

Multi-Fibre Arrangement and the Agreement on Textiles and Clothing

The process of globalization was further aided by trade policies of the major producing and importing centers. As the success of new developing country textile and apparel exports took hold, textile and apparel interests in developed countries grew increasingly protectionist. During the 1960s, multilateral approaches to contain textile and apparel trade were launched. The complexity of the international market for these products continued to outstrip the market's regulatory abilities, as production diversified into synthetics and gravitated from Japan to other countries. Under successive generations of the Multi-Fibre Arrangement (MFA), operative from 1974 to 1994, textile and clothing importers established bilateral import quotas in a variety of individual product categories whenever a trading partner's exports to its market became threatening to domestic market

interests (Cline, 1990). In many instances, these product specific quotas encouraged diversification into the production of alternative textiles or garment categories in order to avoid quota restraints.

The Traditional Apparel Chain and Contemporary Variations in Industrial Structure



Note: Ovals are used to symbolize pivotal points in the industrial chain; other critical junctures are symbolized by boxes. Arrows emanating from the ellipses indicate relative lines of commercial power in the commodity chain.

As of 1994, the United States had negotiated bilateral import restraint agreements with about forty countries, covering about two-thirds of U.S. textile and apparel imports. The Committee for the Implementation of Textile Agreements (CITA), an interagency working group with representatives from the Departments of Commerce, State, Labor, and Treasury, and the U.S. Trade Representative's office, and managed by Commerce's Office of Textiles and Apparel, supervises the implementation of textile bilateral agreements and proposes/implements import restraints as necessary.¹⁸

This system of regulated textile and apparel trade also helped to spawn increased internationalization of production of these very products. As quotas were used up in one exporting country, international clothing entrepreneurs frequently sought new production platforms in which to establish commercial relations with existing manufacturers or even establish new manufacturing operations all together. Exports could grow quota-risk free from a new platform for some time, before attracting the attention of importers. This 'quota-hopping' behavior of the international clothing industry is one of the factors which enhanced the establishment of clothing operations in developing countries (Whalley, 1995).

An important competitive advantage for some countries is that they have not been restricted under the MFA and thus have faced minimal restrictions in export markets. That advantage is a mixed blessing, however, given that foreign firms which relocate because of the MFA are more footloose than firms producing for a domestic market.

Today, the MFA is dead and international textile and apparel trade is managed by the Agreement on Textiles and Clothing (ATC), signed as part of the Uruguay Round Agreements Act (URAA). The ATC lays out a process of liberalization of bilateral import quotas in four broad product groups (tops and yarns, fabrics, made-up textile products, and clothing) over a ten-year period, from 1994 through 2005. This obligation applies to the four countries (or country groupings) which maintained restrictions under the MFA, namely Canada, the European Community-12, Norway, and the United States. It also applies to fifty-five other countries which chose to use transitional import safeguard mechanisms. The U.S. maintains bilateral textile agreements with non-WTO member trading partners such as China, Taiwan, Vietnam, and Cambodia.

The ATC specifies a minimum percent of trade to be 'integrated' (i.e. on which import restrictions would be eliminated) in four stages, as well as a minimum annual quota growth rates for each stage (Shelton and Wallace, 1996), summarized below (Table 2). Negotiations for the ATC were tough and the final agreement ended up with severe backloading of the quota phase out of commitments, i.e. leaving 49 percent of textile and apparel trade for 'integration' (i.e. elimination of quotas) until the very end of the phase-out period (Raffaelli and Jenkins, 1995).

Table 2: Uruguay Round Agreement on Textiles and Clothing Implementation

<i>Date of Implementation</i>	<i>Percent of Trade to be Integrated (%)</i>	<i>Percent Increase in Annual Quota Growth Rates (%)</i>
January 1, 1995 (ATC effectiveness)	16	16
January 1, 1998	17	25
January 1, 2002	18	27
January 1, 2005 (ATC expiry)	49	

¹⁸ The U.S. Government publishes the current status of all textile and apparel import quotas by country and product category and their fulfillment rate on the World Wide Web at www.customs.ustreas.gov/imp-exp/quotas/trtxttrpt.htm.

To date, the four participating countries have emphasized product categories at the lower end of the value added chain (especially tops and yarns, fabrics), raising concerns among textile and clothing exporters that the ATC's final objective of complete integration of textiles and apparel trade will not be accomplished (World Trade Organization, 1997, 1998). Recent analysis by Hughes (1998) suggests that current patterns of textile and apparel imports into the U.S. will result in almost 95 percent of imports remaining subject to quota actions right up until 2005, the end of the ATC.

This means that U.S. apparel importers still face a fairly high level of quota action risk. In 1997, twenty-one embargoes were placed on apparel exporters to the U.S., of which six were placed on Indonesia alone. U.S. companies are therefore always on the lookout for new sourcing prospects. One recent such 'hot prospect' supplier is Cambodia, whose shipments to the U.S. rose by 544.5 percent in 1998. However, as a non-WTO member country, Cambodia does not receive any ATC protections. Calls were placed by CITA on Cambodian exports of cotton knit shirts and cotton sweaters, even at very low levels, without any room for export growth in a called category. This practice is also against the spirit of Article 1.2 of the ATC which supports Members in offering significant increases in market access possibilities for small and least-developed country exporters and the development of commercially significant trading opportunities for new entrants (which obviously cannot be held in the case of Cambodia because it is not yet a member of the WTO).

Outward processing trade

U.S. and European manufacturers are further lured into off-shore production by tariff laws which offer tariff advantages to domestic producers, providing they manufacture using domestic inputs. This process is sometimes referred to as 'global production sharing' (Yeats, no date). For example, provision 9802 of the U.S. tariff code (formerly 807) states that apparel sewn abroad from U.S. manufactured and cut fabrics are only assessed an import duty on the foreign value-added contributed by the off-shore assembly process. The 1986 Caribbean Basin Initiative (known as 807a) provides an even more liberal quota system to the U.S. market for Caribbean garment exports made of American fabric.

The American apparel industry has lobbied heavily, thus far without success, for 'CBI parity,' i.e. identical tariff treatment for both Caribbean and Mexican products. The latter now enter the U.S. virtually duty-free, under NAFTA. This has led to a significant change in U.S. apparel import patterns. In 1983, the big four Asian exporters (China, Taiwan, Korea, Hong Kong) provided two-thirds of U.S. apparel imports, and Mexico and the Caribbean Basin nations only supplied 3.8 percent. In 1997, Mexico and the Caribbean Basin nations provided 30 percent of our imports, and the same big four only 28 percent. In addition, other Asian exporters have dramatically increased their supply to the U.S. The evolution of apparel import sources is depicted in Table 3.

One interesting result of 9802 provisions is that U.S. textile firms have asserted themselves much more strongly in the apparel assembly process, working directly with retailers and in many instances bypassing apparel manufacturers. This is leading to interesting competitive shifts among actors in the industrial chain.

Western Europe has similar outward processing trade provisions with North African and Eastern European partners. 'Outward processing traffic' (OPT), as this arrangement is known, takes place between Germany and Eastern European countries such as Poland and the Czech Republic. France sends its fabrics to Mediterranean clients such as Morocco and Tunisia for processing.

Table 3: U.S. Apparel Imports from Selected Countries

<i>Countries</i>	<i>1983</i>	<i>1995</i>	<i>1996</i>	<i>1997</i>	<i>1998</i>
China	8.1%	10.2%	10.4%	10.5%	12.6%
Taiwan	18.5%	5.9%	5.4%	4.8%	4.5%
Korea	17.1%	4.7%	3.8%	3.5%	4.2%
Hong Kong	23.2%	12.1%	10.6%	9.2%	7.3%
Indonesia	0.8%	3.4%	3.6%	3.7%	na
Malaysia		1.9%	1.8%	1.5%	na
Philippines	3.3%	4.4%	4.1%	3.7%	na
Singapore	2.0%	1.2%	0.9%	0.7%	na
Thailand	1.3%	3.0%	2.9%	2.9%	na
Bangladesh		3.1%	3.1%	3.4%	na
India	2.4%	3.3%	3.3%	3.1%	na
Sri Lanka	1.3%	2.7%	2.8%	2.8%	na
Pakistan		1.6%	1.5%	1.4%	na
Turkey		1.8%	1.6%	1.6%	na
Mexico	1.8%	7.4%	9.8%	11.8%	12.4%
Guatemala		2.0%	2.2%	2.2%	na
El Salvador		1.7%	2.0%	2.5%	na
Dominican Rep.	1.4%	5.0%	4.8%	5.2%	na
Haiti		0.2%	0.3%	0.3%	na
Jamaica		1.5%	1.4%	1.1%	na
Costa Rica	0.6%	2.2%	1.9%	2.0%	na
Honduras		2.6%	3.4%	3.9%	na
Other CBI		0.5%	0.6%	0.6%	na
Italy	2.7%	2.8%	3.2%	2.9%	na
All other	15.5%	14.7%	14.8%	14.7%	na
Big Four	66.9%	32.8%	30.2%	28.0%	
ASEAN	7.4%	14.0%	13.3%	12.6%	
Other Far East	3.7%	12.5%	12.3%	12.3%	
Mexico	1.8%	7.4%	9.8%	11.8%	
CBI	2.0%	15.7%	16.5%	17.7%	
Italy	2.7%	2.8%	3.2%	2.9%	
Other	15.5%	14.7%	14.8%	14.7%	
Mexico+CBI	3.8%	23.1%	26.3%	29.5%	

Source: 1983, Cline (1987)

1995, 1996, 1997, www.americanapparel.org/gen_info_tables_home3.html#table12

1998, OTEXA (1999)

U.S. clothing importers are skeptical, however, with regard to applying the same notion of outward processing trade to a more distant continent: Africa. The Africa Growth and Opportunity Act, a bill authorizing a new trade and investment policy for sub-Saharan Africa, has been re-introduced in the U.S. House of Representatives as of February, 1999. It supports the elimination of all textile and apparel quotas between Africa and the U.S.¹⁹ The U.S. apparel industry opposes the bill, unless it adopts a 9802 stance, i.e. offers quota-free, duty-free access to African apparel exports *if sewn from U.S. cloth*.

As noted in an earlier section, foreign direct investment in the 1970s and 1980s was largely driven by import substitution objectives. Significantly large foreign markets with high tariff protection against competing imports became attractive for multinational companies seeking to establish a local production base with which to supply that market, assuming that capital controls were not too onerous. However, in the late 1980s and 1990s, liberalization of many developing country economies resulted in the reduction of those tariff barriers and the reorientation of economies from import substitution to export promotion. This changed the motivation of FDI suppliers, and led to the encouragement of FDI for labor-intensive, export-oriented manufacturing.

Implications of globalization

True globalization means markets for fabric and apparel are now worldwide. Textile and apparel firms need to consider that there is no 'home' region for any given product; for example, the market for Dupont's *Lyra* is now 70 percent overseas. Developing countries participating in this global value-chain as FDI recipients or commercial partners need to be able to respond to these pressures.

The emergence of a 'global consumer' is leading to the need for the value-chain to develop a demand-based production system capable of delivering consumers exactly what they want. Some U.S. firms are responding by investing in mass customization, or the manufacture of garments according to consumer-defined specifications.²⁰ Implementation of mass customization requires flexible product architecture and agile manufacturing. This means increased factory efficiency, working collaboratively with suppliers to enhance input use flexibility and thus reduce inventory costs, and developing the software and equipment required to handle automatic manufacture of unique orders.

Manufacturers which choose to remain in the U.S. find they must work smarter to stay in business. A survey of New England apparel manufacturers reveals that the key to success in some firms is the establishment of a flexible, multiskilled workforce to adapt to quick response modular manufacturing, coupled with flexible working conditions to encourage retention of its highly skilled workers and increased use of production automation and information systems for improved management.²¹ Indeed, the adaptation of information technology-based innovations is beginning to

¹⁹ A separate bill, the HOPE (Human Rights, Opportunity, Partnership, and Empowerment) for Africa Act, is also under consideration by the House. It puts less emphasis on textile/apparel shipments to the U.S.

²⁰ Originally touted by Pine (1993), the concept is being applied to the apparel industry under the auspices of research grants from the National Textile Center, a research consortium of six U.S. universities supported by public and private monies. See also Anderson et al. (1997).

²¹ "U.S. apparel manufacturing returns to its roots," *Apparel Industry Magazine*, November 1997.

affect all stages of the manufacturing process, including pre-assembly, sewing, and post-assembly flow.²²

Process innovation, in the form of the adoption of quick response (QR) strategies (use of technology for point-of-sale tracking to facilitate just-in-time delivery), is another strategy U.S. apparel firms are pursuing. Sullivan and Kang (1999) cite a number of studies which indicate that when garments are fully costed, including inventory carrying costs, lead times, and protracted delivery from distant suppliers, U.S. manufactured merchandise or goods cut in the U.S. and assembled nearby are as or more competitive than Asian imports. Nevertheless, willingness to adopt these innovations is conditioned by size, smaller firms being less engaged than larger, more capital-intensive firms, according to Sullivan and Kang. Interestingly, they find that QR adopters are more likely than non-adopters to produce merchandise offshore.

These trends have important implications for developing country firms. On the one hand, if they are to supply easier-to-manufacture commodity clothing, they must be able to produce in large run sizes. This may pose problems. For example, many South African clothing firms, relatively advanced compared to other apparel industries in sub-Saharan Africa, are not comfortable trying to penetrate the U.S. market because of their own production capacity constraints. On the other hand, if developing country firms seek to enter the more specialized fashion clothing markets, they can get away with smaller production capacity as the run sizes are smaller, but they must be able to respond quickly to new design specifications and deliver product efficiently to clients. Moreover, as U.S. firms increasingly begin to adopt mass customization techniques in their domestic manufacturing facilities, they hope to gain in quality, productivity, and customer responsiveness over foreign suppliers. Foreign suppliers, in turn, will either have to compete on even larger cost differential advantages, or integrate aspects of mass customization into their operations.

At the same time that 'globalization' becomes all-important, trade regionalization is competing for attention. Trading blocs are increasingly important in determining sources of supply, as witnessed by the incredible shift in U.S. imports away from Asia and to Latin America, because of NAFTA and CBI. As world trade is increasingly liberalized, competition will get fiercer. This means that hidden barriers to trade will increase in importance. Retaliation mechanisms such as anti-dumping and countervailing duties will be used to fight unfair trade. Such fights will penalize small countries, which lack the capacity to launch and fight such legal trade battles.

Role of foreign direct investment in these trends

As more and more countries have industrialized at least some portion of their economies, and as more and more of them embrace globalization to some degree, global production networks are becoming increasingly common in the apparel industry. Whereas an earlier generation of companies invested directly in offshore affiliates to secure low-cost sources of supply for re-import back into home markets, shifts in the global organization of production are now making it possible for U.S. retailers and brand designers/merchandisers to work via international brokerages to contract for production. This has a direct effect in terms of *reducing* outflows from the U.S. of foreign direct investment capital in the apparel industry.

²² Hoffman and Rush (1988) noted more than ten years ago that textile and apparel firms in the OECD countries were slowly investing in these new technologies to increase domestic manufacturing productivity.

In many instances, the firms who fill the brokerage niche in the market are multinational Asian companies (often Hong Kong- or Korea-based). These companies offer a number of very important market and financial services to U.S. firms, which have the effect of reducing or sharing international production risks, from the perspective of the U.S. company. U.S. clothing importers cite a number of advantages in working via these brokers. Their knowledge of alternative Asian production environments is extensive. They facilitate risk mitigation in terms of currency and banking variability. They also frequently take responsibility for quality assurance (garment quality, timing of deliveries, etc.).

Interestingly, in a 1994 World Bank seminar exploring textile and garment sector restructuring, the encouragement of FDI was not considered a major policy issue for future growth in Asia (Meyanathan). India's priorities included a shift in management culture (from one which is civil service-based to one which is entrepreneurship-oriented), definition of market niches for composite mills without power looms, development of a culture of quality and a strategy for labor retrenchment, and emphasis on the importance of ending high levels of trade protection of domestic cotton and synthetic fiber producers. Indonesia was concerned about the allocation of access of domestic firms to MFA quotas; economic variables to promote growth in the industry; changes in regulatory policies of trade-related institutions such as customs, the financial sector, foreign investment, state enterprises, infrastructure; and support for international trade negotiations initiatives. Koreans stressed the need to diversify products into an up market mix, and noted that the country's large-scale production capacity is not suitable for smaller sized fashion runs into which they wanted to diversify. Rising domestic costs of labor have been pushing Koreans to invest overseas into the Caribbean Basin and Mexico (in order to benefit from duty advantages into the U.S. market) and into southeast Asia. While government credit and subsidies (the Textile Modernization Fund) financed much of Korea's textile development, indirect public support of research and development grants to private technology firms was another option. As Korea's industry matures, the next phase of development should be promotion of a domestic textile machinery sector.

Views from the trenches

A survey aimed at understanding the factors that motivate U.S. textile and apparel firms to outsource production off-shore was sent to a number of manufacturers and importers. Most of the responding firms in this sector source between 85 and 100 percent of their sales from overseas. Some firms have had 20 or more years of experience in dealing with partners abroad, while others have decided more recently to shift part or all of their production off shore. All firms are quite unanimous in pointing at higher profit margins and better quality/price relation as the main determinants of the choice of foreign suppliers.

There are, however, motivations that are peculiar to each firm as well, dictated for example by marketing strategies. A children's wear manufacturer sought to diversify the merchandise sold through its stores in order to appeal to a wider group of customers, offering lines of product at cheaper costs than the U.S. manufactured ones. Other firms have been motivated by the dissatisfying performance of the U.S. market of suppliers. One brand label apparel manufacturer specifically shifted to foreign sources of supply because of higher costs, unreliable deliveries, and poorer quality of U.S. production. Other responding firms mentioned the better quality of overseas manufacturing as well.

A good part of the overseas activities of the firms surveyed to date are trade- not investment-based. U.S. apparel firms are often merchandisers who design their product domestically and submit the

design either to foreign factories or brokers for manufacture and delivery of the final product. Brokers may be based in the U.S. or overseas. The choice of the type of broker does not seem to be a function of the structural characteristics of the firm, such as the size of the firm or the type of products, but rather of the firm's risk aversion in dealing with agents or the personal perception of the individual responsible for outsourcing. One advantage cited in favor of using a local broker is that communication with the foreign manufacturer is improved. Difficulties in communicating with foreign partners due to lack of cultural understanding is one of the main reasons cited for why a wholesaler decides not to interact directly with overseas firms. Other firms prefer to source directly from overseas manufacturers inasmuch as this allows them to exert a greater control on the different steps of production and delivery.

In a few cases, the U.S. firm may operate at the production level in foreign markets through the establishment of local subsidiaries. One respondent has operated a subsidiary for fifty years in the Philippines and just recently established a new one in Vietnam as of 1995, which together supply about 75 percent of its merchandise. Another manufacturer has moved about 50 percent of its production facilities abroad, in this case all in Central America, mostly in Mexico and a few in Honduras, Costa Rica, and the Dominican Republic as well.

Some outsourcing takes places from developed countries, such as Italy and Austria, but the developing world is by and large where most foreign suppliers of textile and apparel are located. These are mainly in Hong Kong, Singapore, China, Thailand, the Philippines, Indonesia and Korea in Asia, Egypt and Turkey in North Africa/Middle East, and finally Mexico and the Caribbean Basin countries. Sometimes the product dictates the foreign country in which a U.S. firm decides to operate. For example, knit jogging suits are Indonesia's specialty, since this is what that country's machinery is set up to handle. It would be difficult to contract for wovens production with companies set up to do knitwear, since they do not have the right machinery to finish off woven garments properly.

Most firms monitor potential new markets on a regular basis, especially as labor costs in Asia have been on the rise. As local labor forces become more skilled and better trained and upward pressure is exerted on wages, they tend to shift into the production of electronics and up-market goods. Generally, import brokers are said to be the pioneers who blaze trails into new countries, followed eventually by those U.S. firms that import directly from production sources. In some cases the U.S. firm will follow its agent as he/she moves his/her activities to a new market. This has been the case for Singapore and Malaysia, as Hong Kong brokers saw new potential some years ago and recommended products from those countries to their U.S. clients. Once a country is deemed to be appropriate to work in (see below), it can usually take from two weeks to a year to set up a new partnership.

While all manufacturers/importers are active in Asia and Latin America, almost none have working relation with sub-Saharan African countries. Only in one case did a wholesaler mention a partnership with firms in Mauritius and Swaziland.

The general impression about the region is that while production costs in sub-Saharan Africa are lower, longer and less reliable delivery times as well as lower quality of the product do not make up for the difference in final price. Setting aside considerations on the political stability of this area, of which more and more people are dubious as a result of recent events in central and eastern Africa, the region is perceived as lacking in two essential factors: basic infrastructure and fabric production capacity. One of the surveyed firms confirmed that ready availability of fabric is crucial. Shipping

U.S. made and cut fabric into Asia for assembly can require a four-to-six-week turnaround cycle, whereas manufacturing in Asia on the basis of fabric sourced within the region is said to reduce that time to only about a week. In a marketing environment of increasingly shorter seasons, such lead times are critical decision variables.

Nevertheless, especially in the face of rising production costs in Asia, a very few firms are at least exploring the possibility of dealing with manufacturers in Africa, finding its cost potential quite interesting. In one case a U.S. manufacturer is following one of its Asian suppliers as the latter is exploring opportunities in Mauritius and Madagascar.

Relationships with partner countries and suppliers are usually quite stable, although subject to frequent review based on quality and reliability of the products received. Criteria for breaking off a partnership include product which does not meet quality standards, inability of the partner company to deliver goods in a timely fashion, or inability of the firm to complete the import paperwork properly.

The following factors are listed by firms as important in determining their selection of developing country partners.

Costs

Perception of the importance of costs in determining the relationship of U.S. firms to their overseas partners varies across manufacturers, mainly due to the countries with which they work. Most importers of textile and apparel work with FOB prices. Such prices are composed of many different factors, labor costs, local taxes, tariffs and non-tariff costs, etc. While each individual cost is without doubt significant, it is its relative weight in the total equation that determines how much it will affect the decision of a U.S. firm to choose a partner from a country, and such weights differ across region and countries.

Labor costs in the supplying country are generally recognized to be a concern for U.S. firms, though not at the same level of importance for all firms. All firms pay attention to the garment's final price, which is a function not just of wages but also of labor productivity (number of minutes per operation/garment) and especially quality. In some cases, the U.S. firm guarantees the quality by sending in its own inspectors, in other cases, local inspectors are used.

Most firms also indicate the importance of the geographic location of their partner. It appears that what lies beyond this split between costs related to transport and costs related to production is explained by the characteristics of the suppliers' market. It is an extremely competitive market, driven by the demand of the U.S. importers. Out-sourcing textile and apparel is only a matter of choosing among a wide array of firms/brokers that have about two decades of experience in the industry. Freight costs are determined, on the other hand, in a much less competitive market. These affect the U.S. importers not only in terms of costs but also time: closer markets can guarantee lower costs and faster deliveries.

Stability of the currency is not an issue, since most of the U.S. firms deal in U.S. dollars. However, U.S. firms are certainly aware of fluctuating currencies and ensuing financial problems. For example, when the Asian crisis hit in Indonesia, one firm mentioned that it picked up the cost of imported inputs, since their local partners lost access to credit.

Taxes

Most survey respondents indicated that fiscal regimes (both corporate taxes and trade taxes) in the supplying countries affect their decision to establish a partnership in such country. However, when asked specifically, some firms indicated that it is just one of many factors woven into the final bid price they evaluate.

Local labor/ Management skills

Respondents indicated that skills of local labor may be a factor in determining the choice of job allocation among a range of foreign trade partners. For instance, sewing operators in the Far East are known for their higher stitching and embroidery skills and thus are contracted for jobs which require more complex assembly and trim operations such as formal wear or tailored clothing. Those in Mexico and the Caribbean, on the other hand, are considered less skilled (though not necessarily less expensive, after the Asian financial crisis) and thus tend to be used for more basic construction of items such as jeans and casual sportswear.²³

On the other hand, all firms agree that management skills are essential in order to guarantee reliable deliveries and to ensure an efficient production process. In some instances, though, local management is trained in the U.S., thus reducing the importance of its direct availability in the foreign country. Abdel-Latif (1993) suggests that Egypt's inability to respond to Western buyers' and consumers' quality and delivery timing requirements makes it hard for Egyptian clothing firms to export ready-made garments successfully to high income markets. Such responsiveness requires sophisticated management skills. In South Africa, Salinger, Flaherty, and Bhorat (1998) found that one measure of management innovation was the degree of computerization within the firm. The most cutting edge firms had automated not only management and billing functions, but design, manufacture, input supply management, and sales/order management, using Internet-based environments. Such uses of information technology promote a more seamless web of relations between manufacturer and retail client.

Labor force reliability is also the main issue when looking at the organization of labor, as all respondents indicated that a history of labor unrest or general strikes endangers the stability of the supply.

The geographical and local labor skill factors may be interlinked. One U.S. manufacturer with production facilities abroad explained that the firm chose to locate facilities in Central America since proximity to the United States guarantees faster, and thus better, control as well as shorter lead times. The latter are an essential part of the competitive edge of this particular firm, part of whose strength lies in rapid replenishment of supplies to retailers. At the same time, the part of their line of products that requires more elaborate processing is being sent to the Asian markets, even though this implies longer delivery times.

Production and marketing infrastructure

There is almost general consensus that the reliability of power supplies, communications, ports and freight services, as well as quality packaging, are very important factors affecting the relations between the U.S. importers/manufacturers and their foreign partners. For example, one firm indicated that it is considering drastic reductions in the supply it purchases from Bangladesh because

²³ The distinction between complex and simple garment reflects quite a low level of sophistication in the production process. As one U.S. manufacturer explained, the number of pockets that need to be sewn on a pair of pants can make the difference between relying on Asian labor rather than on Latin American workers.

of the poor conditions of road infrastructure in the country. With only one road between Dhaka (the capital and major airport) and Chittagong (the major seaport), and production capacity concentrated in both zones, logistics tend to be compromised during the monsoon season in August-September, which is a particularly demanding season for U.S. retailers with garments needing to be shipped out efficiently.

Regulatory and business environment

Mixed results were obtained on this particular issue. Some manufacturers/importers have indicated that the regulatory and business environment is quite important. These U.S. firms need the imported input facilitation which export processing zones (EPZs), free zone status, or bonded warehouses, offers. One of the survey respondents, which produces abroad part of their line, explained that the existence this type of facilities is a must in the company's choice to locate manufacturing in a country.

Other firms have instead indicated that regulatory frameworks and instruments such as duty-drawbacks and tax advantages do not affect their choice of foreign partner. In fact, certain firms responded that EPZs are often more costly and less efficient than operations in the regular domestic markets, adding often a further layer of bureaucracy to already existing cumbersome procedures. As an example, one firm mentioned that in Egypt minimum wages are enforced in EPZs, while not in the rest of the country, and that the advantages available in EPZs do not make up for the higher costs of production inside the zone. Another firm indicated that administrative restrictions in EPZs can cause problems. For example, they are forced to re-export the final product within a certain time or face penalties (i.e. have to pay the input duty on imported inputs).

The level of corruption is recognized universally as a very important determinant of the relationship with foreign partners. However, there are varying degrees of confrontation. In the Philippines, one firm noted, corruption is only a problem if a firm does not comply to the 'required' procedures, otherwise, all operations run pretty smoothly. In Indonesia, corruption has become almost an institution and firms learn to deal with it just like they do with all other kind of institutions.

U.S. government institutions

Preferential trade agreements with the U.S. appear to be essential, in particular for those firms who deal with non-WTO members. Firms are concerned about unpredictable trade restrictions implemented by the U.S. government. For example, in 1998, a sudden increase in apparel exports from Cambodia, for example, led to the imposition of import quotas by the U.S. Similar experiences are cited in Kenya and elsewhere. Such reactions seem to be provoked by strong period-to-period increases, even if the overall levels of exports to the U.S. are still small. This makes U.S. firms extremely reluctant to pioneer new commercial/trade relationships with countries whose historical track record in this field is slim.

Reputation of the country and of local partner firms

All respondents agree that one of the main determinants of the selection of a country in which to look for partners is the social and political stability of the country itself. Moreover, all agree that the image of the country in the eyes of the U.S. consumers is of the utmost importance, although some firms admit that this is a function of the exposure of the U.S. firm. For example, firms that are publicly traded or large firms that carry a widely recognized brand, are more aware of this type of issue than smaller actors, almost unknown to the general public.

On the side of the partner firms, the most important factors determining the choice is the reliability of the partner and the quality of the product (computerization does not appear to play a great role unless it is considered to be directly related to these two items).

On the country side, human rights and child labor are frequently mentioned as key variables, especially by manufacturers of children's apparel. Labor conditions were raised as an issue in the early 1990s by U.S. organized labor and supporting organizations when the NAFTA agreement was crafted. Since the mid-1990s, visible campaigns by partnerships of media and non-governmental organizations have raised the level of awareness of U.S. consumers to sweatshop working conditions abroad. Stories about soccer balls assembled by children in Pakistan, Disney motif pajamas sewn by underpaid workers in Haiti, and toys stitched by women in fire bug factories in Thailand are just some of the cases that have come to light in recent years.

U.S. media personalities take their fight to the airwaves, citizens' pressure groups organize boycotts against Nike, Reebok, and Guess, and college students demonstrate in support of labor unions' campaigns. This rising crescendo of consumer awareness and negative publicity led the Clinton Administration to establish the Apparel Industry Partnership (AIP) in 1996, comprised of corporate (apparel and footwear), NGO, and labor representatives. The AIP issued a voluntary Workplace Code of Conduct in November 1998 (AIP, 1998), taking stands against use of forced labor and child labor (age cut-off as defined by local labor laws), against harassment and discrimination of labor, and in support of minimum wages (again, as defined by local labor laws) and a maximum 60-hour work week. Principles of monitoring and standards for independent evaluation monitors were articulated.

More recently, a coalition of U.S. non-governmental and labor organizations filed class-action suits seeking to hold retailers and manufacturers accountable for workplace conditions in Saipan, a U.S. territory.²⁴ Thirty-two factories on Saipan, mostly owned by Chinese, Japanese, and Korean subcontractors, stamp their clothing with "Made in the U.S.A." tags and avoid duties, tariffs, and quotas. The suit claims that U.S. labor laws, to which Saipan firms must conform, are routinely abused. Eighteen U.S. firms, including Nordstrom, Warnaco, Tommy Hilfiger, J.C. Penney, Wal-Mart, Osh Kosh B'Gosh, and Dayton Hudson Corp., were named in the suits.

This intensifying confrontation between the globalization of markets and the broadening attention of media and the Internet has had a measurable impact on U.S. firms' consciousness with regard to child labor and working conditions issues. Adverse consumer reaction must be considered because this attention now affects firms' bottom lines, not because such consideration has been mandated (Spar, 1998a). In fact, formal consensus on internationally recognized core labor standards has not been achieved, making it difficult for firms doing business abroad to know when they're off the mark.²⁵ A number of independent, verification services (e.g., Verité, a non-profit organization) are now available to supplement in-house departments to conduct inspections of subcontractors' sites.²⁶

²⁴ Associated Press report, January 13, 1999.

²⁵ Various ILO conventions regarding minimum age and other labor conditions already exist. However a Convention concerning the prohibition and immediate elimination of the worst forms of child labor (slavery, prostitution, drug trafficking, and any work likely to jeopardize the health, safety or morals of children) is due to be debated at the next ILO general session, to be held in Geneva in June, 1999.

²⁶ At a recent Harvard University business forum on tax policy, FDI and fiscal stability in developing countries (March 25, 1999), one corporate representative noted that "the experience of Reebok and the others has shown us that whether we subcontract out for labor or not, how labor is handled is *our* responsibility."

Developing country strategies

If the U.S. industry is in the midst of implementing new strategies to increase its own competitiveness relative to foreign suppliers vis-à-vis both the U.S. and foreign markets, adopting automation, just-in-time inventory management, mass customization manufacturing, and the like, how are developing countries adapting in order to remain competitive players in the international market?

There are many different strategies being pursued by many different kinds of developing countries. Those developing country manufacturers who have already been exporting basic garments for some time are seeking to protect or grow their overseas market share. To do this, they are investing (with domestic or foreign sources of capital) in new equipment, new product lines, new market arrangements, and new commercial relationships. These countries already have a commercial track record. As a result, increased emphasis on market connectivity means that strategic alliances, subcontracting, and joint ventures may eclipse FDI itself as the 'leg up' used by experienced developing countries to expand exports or raise their value-added.

On the other hand, there are countries which heretofore have not had a long experience with these exports (Viet Nam, Cambodia, most sub-Saharan African countries). These countries are trying to get a foot in the door by soliciting FDI and new commercial connections.

Electronics Industry Findings

This section of the report focuses primarily on the computer industry because of its dynamic and increasingly global nature and because of the potentially huge benefits it has to offer to developing countries in terms of development of local skills and generation of local income. Both the literature and our survey results indicate that the so-called globalization of the computer industry is leading to an increasingly diverse set of opportunities for less developed countries. These opportunities can be broadly grouped into three main categories: (1) foreign direct investment, (2) sub-contracting, and (3) trade. The macroeconomic data and our survey results indicate that all three types of relationship between developed and developing countries have the potential to increase the welfare of developing countries.²⁷

For example, Figure E.1 indicates that FDI by U.S. multinationals in the electronics industry has increased from less than \$1 billion to close to \$10 billion between 1982 and 1997. Figure E.2 indicates that sub-contracting to local firms in developing countries has also increased substantially. And Figure E.3 shows that imports by U.S. firms from developing countries continue to increase more rapidly than exports to those same firms. All of these trends imply increased employment opportunities for developing countries. This is confirmed by Figures E.4 and E.5, which show a dramatic increase in worker compensation and productivity and an increase in the absolute number of individuals hired by U.S. multinationals in developing countries. Importantly, our data also show that at present, Asia has been the primary recipient of these benefits, Latin America is starting to tap into these opportunities, and Africa appears to be left out.

Why is it that Asia has been so successful at attracting FDI in the electronics industry? Is it lower tax rates? Lower wage rates? Greater worker productivity? In what follows, we try to provide some answers to these questions using evidence from the literature, macroeconomic data, executive opinion surveys and interviews. First, however, we provide a brief history of the electronics industry

²⁷ For a complete tabulation of survey results, see Table E.2 in Appendix E.

to give the reader an understanding of how the computer industry arrived at its global nature and what exactly we mean by globalization. We then look specifically at the globalization of manufacturing in the computer industry because it is in manufacturing where the opportunities have historically been the greatest for developing countries. Finally, we conclude with a summary of the most important findings from our survey of senior executive in the electronics industry. We highlight the results that seem to have the most relevance for policy but welcome the reader to study the details of the survey results provided in Appendix E.

Recent changes in the electronics industry

By the end of the 1970s, U.S. electronics firms were almost completely dependent on Japanese competitors for the technology necessary to produce consumer electronics products. U.S. firms became so far removed from the state of the art that they were unable to develop and deliver new products to the market at a fast enough pace. Hence, profits dwindled and by 1980, most major U.S. firms had exited the consumer segment of the market. General Electric (GE) and RCA survived a few years longer by putting their brands on Japanese original equipment manufacturing (OEM) production. However, soon even GE and RCA, who had created most of the consumer electronic technologies that the Japanese perfected, left the business.

The loss of the consumer electronics industry eroded the U.S.' capability to supply the components, machinery, materials and control technologies (e.g., software), and the associated know-how that producers use to develop and manufacture products. The only alternative to increasing dependence on the closed oligopoly of Japanese rivals was to increase competition among suppliers. Hence, with the help of government policies and local private investors in Asia, U.S. firms gradually turned to other countries in Asia as a supply base alternative to Japanese firms.

However, the U.S. firms were slow and by the mid-1980s, Japanese producers had not only taken over consumer electronics, they had also gained leading world market shares in semiconductor chips, materials, and equipment and threatened to take over the entire computer industry. U.S. policymakers and industrialists were so worried that they convinced the Reagan Administration to use interventionist industrial policy to support the domestic microelectronics industry. This support took two forms: (1) direct financial support of \$100 million per year to the industry's manufacturing technology consortium, Sematech (half of Sematech's annual budget); and (2) negotiation of the U.S.-Japan Semiconductor Trade Agreement.

By 1994, U.S. producers of silicon chips and semiconductor materials had regained the dominant world position. By contrast, the Japanese now lagged behind. The success of U.S.-owned firms has rested in significant part on the growing technical sophistication and competitive strength of Asian-based producers in the China Circle (China, Taiwan, and Hong Kong), Singapore, and Korea. While useful to the U.S. firms in the last round of market battles with Japanese firms, Korean electronics producers, such as Samsung, and China Circle producers, such as Taiwan's dominant microcomputer firm ACER, are also formidable potential competitors.

As the Asia market develops in both technical sophistication and size over the next decades, some believe that leadership in the electronics industry may pass from the U.S. and Japan to indigenous Asian producers, especially those centered in the China Circle. However, for the moment the U.S. computer industry continues to retain leadership in the world market, based on its strength in research, design, software development, marketing, and customer support. In computer systems, U.S. firms currently control 76 percent of the world market for supercomputers, 60 percent mainframes, 61 percent mid-range computers, and 67 percent for desktops. They also dominate

global computer peripheral (60 percent) and networking (63 percent) markets, particularly in hard disk drives, where six U.S. suppliers alone hold an 87 percent share. U.S. firms also dominate the semi-conductor market holding 45 percent of the market share. Foreign competition aimed at eroding this strong U.S. position in the U.S. and world computer markets has been intensifying. Asian suppliers, in particular, have announced their intention to wrest control away from their U.S. rivals and pose a challenge in high-performance systems and personal computers.

Resulting opportunities for developing countries

Intense competition in the electronics industry has led to a change in the structure of the computer industry and more opportunities for developing countries with relatively skilled labor. The computer industry worldwide has evolved from an environment structured by vertically integrated companies that provide all elements of the computing solution internally, to a fragmented environment comprised of horizontal competitors. The trend toward a segmented market has created numerous choices for the consumer and a variety of opportunities for producers in both developed and developing countries. More specifically, this market structure provides opportunities for vendors to develop new or redesigned niche products and specialized services. For example, the U.S. computer industry alone comprises 13,222 firms; see Figure E.6 for a breakdown of these firms by specialization.²⁸

The computer industry value-chain can be characterized as follows:

Stage 1: Technology Tier

Semi-conductors & related devices: chips, wafers,... (Intel, AMD, National Semi-Conductor)

Electronic components: liquid crystal displays, circuits,... (Flextronics, Jabil, SCI)

Stage 2: Building Block Tier

Computer storage devices: hard disk drives, tape drives,... (Seagate, Quantum, Western Digital)

Printed circuit boards (Solelectron, Read-rite, DII)

Computer terminals components: monitors, keyboards,... (Powerhouse, KeyTronic, Network Computing)

Stage 3: Branded Products

Computer peripheral equipment: printers, diskettes,... (IBM, Cisco, Lexmark)

Electronic computers: mainframes, mini-computers, personal computers,... (IBM, Hewlett Packard, Compaq)

A few giants in the industry remain vertically integrated but even these firms are beginning to sub-contract out various stages of the value-chain. Developing countries that have managed to enter the computer industry like China, Taiwan, Korea, Singapore, Malaysia, and the Philippines tend to manufacture more mature products (e.g., building block and branded product tiers) because of their relatively lower wage rates and increasingly sophisticated workforces (Singapore is an exception).

Changes in the economics of competition have had far-reaching implications for market structure. In particular, many argue that there has been a shift from partial to systemic globalization in the industry and that systemic globalization is characterized by international production networks.²⁹ In

²⁸ Some definitions of the computer industry do not include semiconductors. We do here because semiconductors are critical to the success of the computer industry.

²⁹ See for example, Ernst (1997).

spite of these networks, the home base is still the predominant locus of corporate ownership. Indeed, between two-thirds and three-quarters of the assets, employment, and sales of most MNCs, and an overwhelming percentage of their best compensated and highest skilled jobs, are still in a home base. Of the world's top fifty MNCs of all national origins, almost all locate 60-90 percent of assets within the home country. Equally significant, almost all MNC firms still explicitly exercise control from their home country. Thus, firms' strategies are still primarily shaped by the logic of competition in the home market base.

The first consequence of international production networks for developing countries is the rise of contract manufacturing. Contract manufacturers in the United States and abroad are handling an increasing share of the U.S.-based industry's computer productions because of their flexible, low-cost, high-volume manufacturing capabilities. As a result, many of the major computer suppliers have U.S. operations that are used mainly for final assembly and testing, adding value through non-production activities such as research and development (R&D), design, systems integration, and software development. This shift in responsibilities away from the United States has created opportunities for developing countries in the area of contract manufacturing. However, it also means that the type of manufacturing that the lead firms are seeking is of a more sophisticated nature as opposed to 'screw-driver' assembly (i.e. the simplest form of assembly activity).

The second consequence of the increasingly intense competition has been the automation of more and more stages of the value-chain. From 1989-1994 in the United States alone, approximately 21,000 production workers were displaced due to the automation of production facilities, U.S. plant closings, and transfers to offshore manufacturing. Total employment and production worker employment fell roughly at the same rate, more than five percent each year during this period. Production workers represented just over a third of the industry's labor force (Sturgeon, 1998).

Finally, the third consequence of the increase in competition in the computer industry is the increase in the number of research and development (R&D) alliances. To increase the efficiency of research and minimize the risks of product development, U.S. computer companies have increasingly turned to joint R&D alliances. According to the National Science Foundation, information technology alliances continue to multiply at a rapid pace. In 1994, over half of the alliances worldwide were between U.S. companies. Transnational joint research alliances are also on the rise, with U.S.-Europe alliances outnumbering U.S.-Japan partnerships.³⁰

Noteworthy is the absence of developing countries from these strategic alliances. This may be due in part to the difficulty of being able to enforce intellectual property rights in places like China and Russia. Certain trade policy initiatives may have a positive effect on U.S. computer exports by gaining greater access for U.S. suppliers to key overseas markets and improving the enforcement of intellectual property rights. These efforts include the Japan Supercomputers and Public Sector Computer Agreements, resolving trade issues and developing trade promotion programs through the Information Technology subgroups with China, India, and Russia, and supporting the adaptation of the Information Agreement by the major trading nations.

³⁰ Table E.1 shows the current state of strategic alliances.

The evolution of production in developing countries by MNCs

IBM was the first large computer company to invest in Asia. It was soon followed by its competitors who also established core plane wiring operations in Taiwan and Hong Kong. IBM thus gave rise to a new model of international production for American electronics firms: the redeployment of labor-intensive stages of final assembly to Asia. For some time, most of these activities consisted of simple assembly, with very limited local value-added and almost no local linkages. This was originally an exclusive American affair. Initially these activities were confined to: (1) producers and mass merchandisers of consumer devices, with GE and Sears & Roebuck being the most prominent examples; and (2) medium-sized semiconductor 'merchant' firms that were then struggling to establish themselves as independent vendors on the open market.

It is important to note that the strategic rationale for redeploying production to East Asia was very different from the one that prevailed in Europe just after World War II. Market access in East Asia was of practically no concern. The real goal was simple: sourcing for the lowest-cost export platform location. This goal was shared by both the consumer electronics and the semiconductor firms. Yet both differed in how they tried to achieve this goal. The producers and mass merchandisers of consumer devices did not invest in their own production affiliates. Instead, they chose to focus on licensing, franchising, and other contract manufacturing arrangements that eventually gave rise to the now famous OEM contracts.

American semiconductor firms proceeded in a different manner by establishing their own affiliates that focused on very simple 'screw-driver' assembly. Motorola pioneered, with the establishment as early as 1967 of production lines in Hong Kong and South Korea. In 1968, National Semiconductor and Texas Instruments both chose to move into Singapore. Four years later, both companies established their integrated circuit assembly lines in Malaysia, and were joined in the same year by Intel.

Originally, the expansion of American semiconductor firms into East Asia was primarily driven by two concerns: access to cheap assembly hands and the large tariff reductions they could reap by re-importing sub-assemblies from abroad. The overriding goal was to increase profits through cost reductions that did not require the heavy capital outlays that would have been necessary for factory automation at home. In contrast to the consumer companies, however, the semiconductor firms insisted on equity control through the establishment of 100-percent-owned affiliates in order to minimize the risk of technology leakage. This is in accordance with theories of FDI which argue that firms with strong proprietary advantages in technology have a preference for equity control.

Over time, this simple concern with short-term financial savings gave way to more complex motivations. During the late 1970s, it became clear that Japanese electronics firms had succeeded in establishing a credible challenge by automating their domestic production facilities. In response, American semiconductor firms developed an international production strategy that would allow them to preempt possible attacks by Japanese firms through rapid cost reduction. During this period companies such as Intel, Motorola, and National Semiconductor began to upgrade and automate their existing offshore chip assembly plants. To do this, they had to develop linkages with local suppliers and support industries.

In the early 1980s there was an additional round of geographic dispersion by American electronics firms that originally focused on 100 percent-owned affiliates. This time, the lead players were computer companies and firms that produce related peripheral equipment and sub-assemblies. According to Ernst (1997), an American company, founded by an Indian with a Singaporean

passport, played a pioneering role in establishing Singapore as an offshore production site for hard-disk drives in the late 1970s. This company, named Tandon, was one of the leading suppliers of hard drives before it went out of business. It is also worth mentioning that Hewlett Packard (HP) had an affiliate in Singapore as early as 1970, although it was only in the mid-1980s that this affiliate shifted its focus from instruments and medical equipment to computer-related products. The real turning point was in 1981, when two major companies, DEC and Apple, first moved to Singapore.

Since then, more first-league players of the American computer industry have moved production to East Asia. In 1982, DEC established a second affiliate in Taiwan. In the same year, Seagate, only three years after its founding, decided to move a large part of its hard disk drive assembly to Singapore. One year later, in 1983, Seagate established a second affiliate in Thailand in the Bangkok metropolitan area. In 1984, Digital Equipment Corporation established an affiliate in Hong Kong, while Maxtor set its foot on Singaporean soil. Over time, many of these firms have substantially increased the number of production affiliates established in Asia. We will report on the details of these investments when we discuss the survey results.

This intense and dynamic competition in the computer industry continues to force firms to look for innovative ways to reduce costs and increase profits. Part of this includes searching for ways to establish more systemic forms of globalization. In essence, this implies that a company attempts to organize its worldwide operations and inter-firm relationships as part of international production networks. The overriding concern is to generate across national borders closer, faster, and more cost effective interactions between different stages of the value-chain. Increasingly foreign firms are finding that they also have to be involved in local production and in the local market and not simply export platform FDI. East Asian markets are highly protected, not so much by tariffs, but by the presence of large domestic oligopolies that control the distribution channels. With the exception of Hong Kong and Singapore, all countries in the region continue to protect their electronics markets. Indonesia and Thailand are obvious examples, but so are South Korea and Taiwan. In order to compete in the region, firms have to establish a regional supply base.

The execution of global production today: FDI, sub-contracting and trade

Several developments in the electronics industry have made it easier to locate an increasing share of electronics production in developing countries. The first major development is the replacement of metallic parts by plastic parts. Plastic parts are easier to produce and easier to transport than metallic parts. Hence, transferring production activities to Malaysia or Thailand is less difficult. Second, the spread of standard integrated circuits and printed circuit boards has led to a substantial reduction in the number of components. This has opened the door for the current wave of sub-contracting arrangements with an increasing number of local suppliers. The third major development is the simplification of production and the resultant automation of production. Automation means that the quality as well as the quantity of the components can be substantially improved, even with a workforce that has not been exposed to a long tradition in mechanical engineering.

All of these factors contributed to the increase in overseas production by firms in the electronics industry. In order to minimize risk, however, firms typically establish sales and marketing joint ventures first. Then, if successful, they follow with an order for consignment assembly by a local company. Finally, the foreign company can consider investing in its own manufacturing affiliate. With this approach the company takes less risks and the limited resources available are balanced with the need to match production sites with major potential growth markets. The remainder of this section takes a look at trends in each of the three major types of overseas 'involvement' by the MNC: FDI, trade and sub-contracting.

FDI

The data on FDI clearly indicate the increasing shift of investment flows in the electronics industry from developed to developing countries, the majority of which is going to Asia. FDI in the electronics industry appears to be driven by a number of factors including: access to local markets, access to relatively cheap skilled labor, and a number of logistical considerations. These logistical concerns tend to be a function of the stage of the value-chain. For example, a large body of literature shows that substantial barriers exist to the internationalization of R&D. As a result, R&D has been less mobile than other value-chain functions. There is also some evidence that, of all possible international locations for R&D, most locations in East Asia still lack fundamental prerequisites. So far, no location in Asia, including Singapore, appears to have locational advantages for R&D.

As mentioned previously, initial FDI was not driven by access to local markets. The majority of initial FDI went to Asia and was primarily driven by cost concerns. Asia was used as a base for re-export mostly to the United States. Figure E.7 shows clearly that this is no longer the dominant explanation for FDI. Local sales as a percent of total sales by U.S. multinationals has risen from 20 percent in 1983 to more than 80 percent in 1996. There has been very little FDI to Africa and Latin America in the electronics industry and these investments have always been driven by local market considerations.

Access to relatively cheap labor has always been and remains today an important determinant of FDI. However, at least in the electronics industry, while cheap labor was initially used for screw-driver type assembly and hence required very few skills, today more jobs have been replaced by automation, thus increasing local demand for skilled labor. The skills required vary depending on the precise job but include reading and writing, managerial and organizational skills, and engineering talent.

The importance of logistical concerns in determining the location of investment depends upon the stage of the value-chain. For example, proximity to engineering support allows for the effective coordination between assembly manufacturing and product testing. Today, procedures are considerably simplified and testing activities are becoming more user friendly, hence, more engineering support services are available in East Asia, and some even at lower marginal cost than in the U.S. Therefore, while proximity to engineering support is still important, it is possible to find this support overseas. Being close to suppliers avoids the costs of transportation and simplifies logistics. In the electronics industry, proximity to suppliers is critical because of the importance of speed to market. Proximity between prototyping and volume manufacturing continues to be important. This facilitates design modification at an early stage in the production cycle. The only country outside the U.S. with an infrastructure for product design is Singapore. Proximity to customers is sometimes necessary to collect feedback early on customer requirements. This type of proximity appears to be of particular importance in for suppliers of intermediate inputs. Hence, these suppliers tend to follow their customers. To the extent that the customer is located overseas, the supplier will also locate overseas. Finally, the interaction between product and process development does not seem to require physical co-location. For example, many of the sub-contractors have engineers who communicate closely with engineers in the lead firms via travel and telecommunications.

Sub-contracting in the computer industry

Over the last decade, outsourcing has become an important practice in the electronics industry. Firms prefer to focus their activities on specific, core competencies, and purchase the other services

and intermediate goods from other companies. American computer companies, notably Apple, Compaq, and HP, have been pioneers in the subcontracting of component manufacturing, as well as contract assembly. Today, it is normal for a computer company to have its supply chain dispersed in different continents. For example, final assembly is usually dispersed to major growth markets in the U.S, Europe, and Asia; microprocessors are sourced from the U.S.; memory devices from Japan and Korea; motherboards from Taiwan; hard disk drives from Singapore; monitors from Korea, Taiwan, and Japan; and keyboards and power switch supplies from China. In turn, these suppliers ship their products from widely dispersed overseas affiliates. Outsourcing does not only cover components or parts. It also involves high value-added support services, including product customization, product design, and production technology.

Firms increasingly rely on outsourcing primarily because they want to benefit from the huge scale economies of international procurement. The appreciation of the U.S. dollar in the early 1980s also played a critical role because this had increased the cost of capital and outsourcing became an instrument for accelerating the turnover of capital. By outsourcing, a firm can put together materials and components from any location and choose the best global supplier, regardless of location. Outsourcing is thus a way for the firm to get the best services at the best price and the best quality.

In order to coordinate this interaction effectively, however, the company has to make important changes within the firm. For instance, it has to establish that the procurement decision for low-volume, low-cost commodities with mostly high transportation costs has to be decentralized (left to individual affiliates and regional headquarters), whereas decisions for high-volume and high-cost components have to be centralized. Hence, there is usually constant interaction between purchasing, engineering, finance, and quality assurance.

With increasing competition, firms are forced to concentrate more on improving their products and making them more competitive. Hence, their core activities consist of product development, including R&D, and the production of highly automated and high-value added components. Since this is very costly, companies find that outsourcing some of their other activities reduces the costs associated with the expansion of domestic manufacturing plants. Furthermore, since firms find it difficult to keep up with the constant fluctuation of demand, outsourcing gives them the chance to keep track and meet the demand.

A second type of sub-contracting, OEM, differs from more traditional outsourcing arrangements in that it involves the production of final products. OEM arrangements are probably one of the least costly ways for a firm to enter international markets. In such arrangements the customer provides detailed technical 'blueprints' to allow the contractor to produce according to specifications. Often, technical assistance in engineering and process technology is also provided, in order to ensure quality and cost efficiency. OEM arrangements are less costly because the firm is not responsible for a large part of the production activities such as the handling of key components, and R&D as well as marketing and distribution responsibilities. Thus, the OEM supplier can concentrate more fully on its core competencies. In order to become an OEM supplier, however, a firm must already be well established with important technological and organizational capabilities, which are continuously upgraded.

Similar to OEM is original design manufacturing (ODM). Continuous upgrading is even more important for a firm that wants to be an ODM supplier. ODM suppliers must have very high technological capabilities because they are not only responsible for manufacturing services but also for detailed product design.

Trade

Traditionally, international production has been basic assembly type manufacturing and the processing of raw materials. High-value manufacturing, the production of key components and essential support activity, including R&D usually remained in the firms' home countries. The most prevalent examples of this trend were the offshore assembly in Asia by American semiconductor merchant firms, and the redeployment of consumer appliances to southeast Asia by Japanese firms which started in the mid 1980s. The activities that were transferred overseas were therefore those that needed basic unskilled and cheap labor, usually performed by young women. Even Japanese electronic firms during their first wave of export platform production, transferred only simple operational capabilities that they required for production and maintenance. The result of this type of investment was huge increases in the amount of exports by FDI host countries.

For example, in the United States there continues to be a strong growth of imports over exports of computer equipment and parts. This has led to an ever-widening U.S. computer trade deficit. While computer systems trade maintains a surplus, rising deficits in both peripherals and parts reflect intense foreign competition and the fact that U.S. suppliers have spread their production throughout the world. Imports of U.S. and foreign multinationals accounted for nearly 47 percent of total U.S. computer imports in 1993, the latest year for which data are available. These multinationals also had a similar influence on exports, representing roughly the same share of total U.S. computer export value.

However, while the major market for computer related products is still the U.S., increasing competition, along with the profits a firm can reap from early penetration in a growing market is reducing the role of export platform FDI. To compete in emerging markets, firms have to be fast and almost simultaneously introduce their production in all the growing market, these have traditionally been Europe, the US and Japan. In the electronic industry, however, other new markets are becoming important players, especially in East Asia. Noteworthy is the fact that local sales by U.S. firms investing in Asia have risen from 20 percent of total sales in 1983 to more than 80 percent of total sales in 1996.

Views from the trenches

It should now be fairly obvious that firms in the computer industry continue to forge international ties in a number of unique ways. Having outlined the broad trends, we now turn to the specific details regarding both country and partner choice by U.S. firms in the computer industry. The results discussed below are based on executive opinion surveys and interviews of senior executives in the computer industry. Only the most important findings are summarized below. The reader can review the survey results tabulated in Appendix E.

Which firms are we talking about?

Based on the survey, we conclude that we are talking about firms primarily engaged in the computer industry which includes semiconductors, electronic components, computer storage devices, peripheral equipment, and computers. However, a handful of firms in the communications equipment industry also responded to the survey. The majority of respondents are original equipment manufacturers, although contract manufacturers also responded. Products produced by the respondents range from intermediate to final goods and the product cycle for respondents varies from less than one year to more than five years.

Survey respondents report a variety of arrangements for deciding with whom and where to do business. Probably the most important information we can take away from this section of the survey

is the fact that although the arrangements vary, it is in general possible to find out who is making decisions. This is important information for developing countries interested in targeting the electronics industry because it means that they too can find out whom to target when they are promoting their countries.

In spite of the increasing importance of contract manufacturing, the majority of survey respondents indicate that direct investment is still the most common form of manufacturing arrangement. Nearly half of all manufacturing is done via direct investment and approximately one quarter of this is done in developing countries. Joint ventures and outsourcing tie for second place each at 18 percent of total manufacturing. And more than one-third of all outsourcing is done in developing countries. Technology licensing is still very uncommon in the electronics industry and comprises less than 2 percent of all manufacturing arrangements, one-third of which are to developing countries.

Top determinants of choice of overseas location/business partner

In this section of the survey, we ask respondents to simply list the top five concerns they have when choosing a country to invest in and/or choosing a business partner in a developing country. The complete variety of responses is not included here, only the top five based on how often they were reported.

The top five determinants of choice of overseas location in order of importance are reported as: (1) infrastructure, (2) political stability, (3) skilled labor cost and availability, (4) proximity to customers and suppliers, and (5) tax incentives. In the words of one senior executive, “infrastructure and political stability are like the ante in a poker game, if you don't meet these requirements, you can't play.” Once these first two conditions are satisfied, the availability of skilled labor is critical. Skills required as listed by the respondents included: semi-conductor packaging and assembly, equipment maintenance, design engineering, process engineering, equipment manufacturing engineering, electronics, manufacturing, chemistry and chemical engineering, mechanical engineering, microelectronics assembly and testing, troubleshooting, sales, and technical support. Proximity to customers and suppliers appears to be as important as the availability and cost of skilled labor. Tax incentives are the least important of the top five determinants of country choice. The top five determinants of choice of overseas business partner in order of importance are reported as (1) business expertise, (2) financial strength, (3) business philosophy, and (4) integrity and (5) potential new opportunities. Interestingly, previous international experience is not considered important.

Factors that influence entry/exit to and from developing countries

In this section of the survey, we actually list several factors that might influence entry or exit to or from a developing country. Entry criteria are sub-divided into labor force, technical/marketing infrastructure, regulatory and business environment, and tax rates and incentives sub-sections. A comparison of the four sub-categories indicates that infrastructure is marginally the most important with labor force a close second. Within infrastructure, the availability of a reliable power supply is the most important factor and the availability of raw materials locally is the least important. Within labor force, skilled labor force availability and a history of labor unrest are the most important factors while the availability and cost of unskilled labor is least important. The most important concern within regulatory and business environment is the enforcement of intellectual property rights and the most important tax/incentive concern is import duties on manufacturing inputs.

Exit criterion are sub-divided into only two categories: labor force & technical infrastructure and regulatory and business environment. Exit is most strongly influenced by the work ethic of locals while the availability of working capital locally is least important. The two most important

determinants of exit within the regulatory and business environment category are government corruption and civil unrest or war in the capital city. Least important is the competence of personnel in the public sector.

In addition to general criteria, we asked firms to list specific instances of countries that were considered for investment but rejected and countries where investments were made and eventually failed. Many countries are considered as possible candidates for overseas investment and many countries are rejected. Only one country, Mexico, was rejected because the market was overcrowded. All other countries were rejected primarily because of a lack of infrastructure, political instability, and a lack of skilled labor. Failures are uncommon indicating that firms do a lot of investigation before deciding to invest in a developing country. The two most notable failures are South Africa and Indonesia. The investment in South Africa is reported to have failed because the local market failed to develop and because the labor force was uneducated and relatively expensive. The investment in Indonesia was reported to have failed because of local government corruption and a lack of skilled engineers.

Industry trends: We are interested in your opinion

Here we asked six specific questions about industry trends and prospects for developing countries and then asked for any additional comments/suggestions for developing countries interested in developing their computer industry with help from multinationals. In general, the importance of infrastructure and workforce development comes across as key. South Africa is noted as a particular example of a country where the workforce does not have enough skills to support FDI. This begs the question of the type of skills required, covered in the following section.

In addition, the majority of survey respondents report that the manufacturing needs of their industry sub-sector are growing and the majority of respondents agree that electronics assembly is probably the most feasible first step into electronics manufacturing for low-income countries outside of East Asia. Survey respondents are reluctant to consider establishing a manufacturing facility in a low-income country with no previously developed manufacturing industry. Company restructuring and global business factors unrelated to a specific country's incentive packages are agreed to be likely to affect companies decisions to enter and exit developing countries. All but one respondent report that they would not be considering a manufacturing investment in Africa over the next five years.

When asked for advice to give to developing countries, many executives point to the importance of some type of investment development agency. As role models, they suggest that countries study Singapore's Export Development Board, Ireland's Irish Development Authority, and China's industrial zones.

An overview of manufacturing investments

China and India appear to be the most attractive new locations for FDI in the computer industry. In both China and India, firms are not only investing in manufacturing and assembly, they are also performing R&D. Noteworthy is the fact that even the countries that received investment early on for export continue to receive investment today. For example, the first investment reported in our data was an investment in Singapore in 1975 for manufacturing and assembly. In dollar terms, Singapore receives even more investment today than China for activities ranging from manufacturing to R&D. Malaysia and Korea also received substantial investment in the 1980s and continue to receive investment today. Hence, these relationships appear to be ones that have developed over time into ones where initially only backend functions were performed but where almost all stages of the value-chain are now performed.

Implications for developing countries

An important implication of the above findings is that opportunities exist but they are not the traditional, labor-intensive manufacturing for export opportunities that once characterized the electronics industry. Export platform FDI is becoming less viable because of increased automation in the computer industry. Hence, cheap labor is no longer sufficient to attract FDI. However, as manufacturing becomes increasingly distinct from innovation and market intelligence activities, many new opportunities present themselves for low-income countries. Specifically, the importance of contract manufacturing has created a whole new set of potential employment opportunities for developing countries. These include *inter alia* engineers for product, manufacturing and test design, component and equipment buyers, sales staff and account managers to interface with customers, and materials managers and logistics personnel. In short, the rise of contract manufacturing and automation implies fewer jobs but jobs of a distinctly higher quality. In addition, the increased importance of sub-contracting implies more opportunities for local businesses to develop.

Whether we are talking about FDI or sub-contracting, foreign-owned or local operations, the two most critical factors are reliable infrastructure and political stability. Once these minimal conditions are met, workforce development can play a crucial role in enabling a country to become a player in the computer industry. For the lowest income countries, it may be that developing the type of skills one traditionally learns in business school (e.g. accounting, marketing, retail, etc.) is the first step, since these skills are usually less costly to acquire and are the skills that firms are most likely to seek out in the initial stages of a relationship with a low income country. In addition, these skills can be used in a variety of industries, not just the computer industry.

Implications for Developing Country Strategies & U.S. Trade Policy

The spread of global production networks in both the computer and clothing industries could have important positive welfare implications for developing countries. They are likely to facilitate the formation of local capabilities in an increasing variety of markets.

For instance, computer firms now have a vested interest in the development of a regional supply base in Asia. The stakes have been raised and regions now have to compete for investment on a global scale with other regions. If a region has developed a critical mass of specialized capabilities, this is likely to lead to a virtuous circle. Participation in global production networks can thus help the regional cluster establish the missing links to a variety of complementary assets. Equally clear is the fact that those regions that cannot provide such capabilities are left out of the circuit of international production.

Clothing companies now work through a complex web of brokers, overseas subsidiaries and joint ventures, and foreign commercial partners to source apparel items. Some emerging markets in this industry initiated their foray into international markets by pursuing specialized export-oriented institutions, such as export processing zones. In others, those institutions present their own kinds of regulatory complexities today, leading some international companies to prefer working outside those zones in order to get the best priced product. Other developing countries found their access to the U.S. consumer market greatly enhanced when preferential trade arrangements were concluded with the U.S., leading foreign MNCs to relocate inside the preferential trade area, bringing their capital and management know-how, lured by the tariff advantages into the final market.

In light of these evolutionary patterns, why are some developing regions of the world still being left out? It would appear there is a minimum acceptable level of infrastructure and political stability required for a country to be considered. In general, countries in Africa do not pass this test.

However, there are a number of countries in Asia, Latin America, and Eastern Europe that do pass this test. Competition among the latter for FDI and for global commercial networking is fierce.

Once the minimum acceptable level of infrastructure and political stability is met, other country-level factors that make a difference include:

- reputation for managerial skill
- skilled labor cost and availability
- degree of entrepreneurship
- reputation for unskilled labor productivity and quality
- enforcement of intellectual property rights
- power of labor unions
- government corruption
- trade relations vis-à-vis the end market(s) of interest

Important factors for choosing a company with which to do business include:

- production capacity
- expertise and quality
- ability to deliver product according to contract terms
- financial strength
- business philosophy
- integrity

Foreign firms need to understand and be prepared to work with or react to the policy and structural factors driving competitiveness of U.S. firms. As competitive pressures drive product cycles down, it is no longer sufficient to offer a low-cost production platform or even such institutional facilitation as export processing zones or tax incentives. Local labor, skilled and unskilled, must be able to respond to the requirements of the global marketplace. Foreign firms are expected to be able to manage input supply channels, respond rapidly to revised design specifications communicated in from overseas or actually handle product redesigns themselves, handle inventories on behalf of the client, deliver with minimal quality flaws, etc. The emergence of a whole new range of qualitative competitiveness variables to which developing countries must now pay attention as they compete among themselves to attract FDI, means that labor workforce training at all skill levels is becoming essential. Developing a strategic approach to such training will require concerted effort by a variety of stakeholders: educators, employers, policy makers, unions, and international commercial and development partners.

Finally, insights emerging from this work also suggest that U.S. policy makers *in the U.S.* can enhance the ability of developing countries to take advantage of global production network opportunities. For instance, U.S. policy makers could enhance foreign direct investment and global commercial initiatives by a broader range of U.S. firms abroad by recognizing manufacturing industries (such as textiles/apparel) as truly global endeavors, instead of just viewing them as 'U.S. strategic interests' and feeling obliged to defend import substitution interests. U.S. MNCs which manufacture abroad need to know that their exports back into the U.S. market will not be penalized by tariffs or sudden imposition of quotas when import levels suddenly become non-insignificant.

U.S. policy makers can also facilitate overseas investment and operations by helping to forge an international consensus regarding international labor codes of conduct. While the U.S. development

community promotes broad-based or labor-intensive economic growth, lack of agreement on labor relations in low wage countries leaves U.S. firms open to consumer attack and even lawsuits when they import from 'sweatshops' overseas.

A third area where U.S. policy makers can be helpful is in providing preferential access to the U.S. market for our most vulnerable trade partners overseas. While the Clinton Administration has been lobbying for some variation of the *Africa Growth and Opportunity Act* to be passed by the U.S. Congress, the meat of the bill of interest to African exporters, i.e. the promise of duty-free, quota-free access to the U.S. market for African textile and apparel exporters has been strongly resisted by the U.S. industry. Including outward processing trade requirements (9802 provisions), so successful in the context of Caribbean and NAFTA trade growth, in the African trade bill is viewed by most U.S. importers as not terribly workable vis-à-vis more distant African countries.

Finally, U.S. policy makers should adopt a consistent attitude with respect to international trade liberalization. While the Clinton Administration has been energetic in pursuing completion of follow-on agreements to the Marrakesh Agreement which concluded the Uruguay Round, there is uneasiness in some official quarters with respect to technical assistance for trade negotiations training in developing countries. Such incoherent thinking belies our commitment to real global trade liberalization.

Selected References

Abernathy, Frederick H., John T. Dunlop, Janice H. Hammond, and David Weil. (1995) "The Information-Integrated Channel: A Study of The U.S. Apparel Industry in Transition." *Brookings Papers on Economic Activity: Microeconomics*. Washington, DC: The Brookings Institution.

Abdel-Latif, Abla M. (1993) "The Nonprice Determinants of Export Success or Failure: The Egyptian Ready-made Garment Industry, 1975-89," *World Development*, vol. 21, No. 10, pp. 1677-1684.

Adams, Charles, Donald J. Mathieson, Garry Schinasi, and Bankim Chadha. (1998) "The Asian Crisis: Capital Markets Dynamics and Spillover." *International Capital Markets: Development, Prospects, and Key Policy*. World Economic and Financial Surveys. Washington, DC: IMF.

American Apparel Manufacturers Association. (1998) "Apparel Industry Trends: Sizing Up the U.S. Apparel Market." http://www.americanapparel.org/gen_info_stats_home.html. March

Anderson, David M. And B. Joseph Pine. (1997) *Agile Product Development for Mass Customization* Chicago, Irwin Press.

Anderson, Lenda Jo, E. Brannon, P. Ulrich, and T. Marshall. (1997) "Mass Customization: A Consumer Driven Model." Presentation to the International Textile and Apparel Association annual meetings, Knoxville, TN, November 12-15.

Anubhai, Prafull and V. L. Mote. (1994) "India's Textile Industry: A Case Study of Subsectoral Restructuring." In Meyanathan, ed., *Managing Restructuring in the Textile and Garment Subsector*, pp. 109-138. EDI Seminar Series. Washington, DC: The World Bank.

Benner, Lamar. (1998) *The Computer Industry*. Dun & Bradstreet, Inc.

Binswanger, Hans P. and Pierre Landell-Mills. (1995) *The World Bank's Strategy for Reducing Poverty and Hunger: A Report to the Development Community*. Environmentally Sustainable Development Studies and Monographs Series No. 4. Washington, D.C.: The World Bank.

Bonacich, Edna, Lucie Cheng, Norma Chinchilla, Nora Hamilton, and Paul Ong, eds. (1994) *Global Production: The Apparel Industry in the Pacific Rim*. Philadelphia: Temple University Press.

Borrus, Michael. (1997) "Left for Dead: Asian Production Networks and the Revival of the U.S. Electronics." *BRIE Working Paper 100*. <http://brie.berkeley.edu/BRIE/pubs/wp/wp100.html>.

Cairncross, Frances. (1997) *The Death of Distance: How the Communications Revolution Will Change Our Lives*. Boston: Harvard Business School Press.

Caves, Richard E. and Ronald W. Jones. (1985) *World Trade and Payments: An Introduction*. Boston: Little, Brown & Company.

Chen, Tain-Jy. (1992) "Technical Changes and Technical Adaptation of Multinational Firms: The Case of Taiwan's Electronics Industry." *Economic Development and Cultural Change*, Vol. 40, No. 4, 867-881.

Cline, William R. (1987; revised 1990) *The Future of World Trade in Textiles*. Washington, DC: Institute for International Economics.

Dickerson, Kitty G. (1995) *Textiles and apparel in the global economy*, 2nd edition. Englewood Cliffs, NJ: Prentice-Hall.

Doeringer, Peter B., Audrey Watson, Lynn Oxborrow, Peter Totterdill, Bruno Courault, and Elisabeth Parat. (1998a) "Strengthening Apparel Production Channels: Public Policy for the Clothing Industry in the U.S., UK, and France." Paper presented to International Institute for Labour Studies workshop on Global Production and Local Jobs: New Perspectives on Enterprise Networks, Employment and Local Development Policy, Geneva, March 9-10.

_____. (1998b) "Transforming Apparel Production Channels: Lessons from the Clothing Industry in the U.S., UK, and France." Paper presented to International Institute for Labour Studies workshop on Global Production and Local Jobs: New Perspectives on Enterprise Networks, Employment and Local Development Policy, Geneva, March 9-10.

Dooley, Michael, Eduardo Fernández-Arias, and Kenneth Kletzer. (1996) "Is the Debt Crisis History? Recent Private Capital Inflows to Developing Countries," *World Bank Economic Review*, 10, 1 (January): 27-50.

Ernst, Dieter. (1997) "From Partial to Systematic Globalization: International Production Networks in the Electronics Industry." A joint publication of The Data Storage Industry Globalization Project Report 97-02, Graduate School of International Relations and Pacific Studies, University of California at San Diego, and BRIE Working Paper #98, Berkeley Roundtable on the International Economy, University of California at Berkeley.

Ernst, Dieter, Tom Ganiatsos, and Lynn Mytelka, eds. (1998) *Technological Capabilities and Export Success in Asia*. Routledge Studies in the Growth Economies of Asia. London: Routledge.

Fernández-Arias, Eduardo and Peter J. Montiel. (1995) "The Surge in Capital Inflows to Developing Countries: Prospects and Policy Response." *WPS 1473*. The World Bank: Washington DC.

_____. (1996) "The Surge in Capital Inflows to Developing Countries: An Analytical Overview," *The World Bank Economic Review*, Vol. 10, No. 1, 51-77.

Flaherty, Diane and Lynn Salinger. (processed) "Gender and Innovation: Lessons Learned from the South Africa Shop Floor." Draft working paper prepared for the Equity and Growth through Economic Research/Trade Regimes and Growth project. Cambridge, MA: Associates for International Resources and Development.

Gereffi, Gary. (1994) "The Organization of Buyer-Driven Global Commodity Chains: How U.S. Retailers Shape Overseas Production Networks." In Gereffi and Korzeniewicz, eds., *Commodity Chains and Global Capitalism*, pp. 95-122.

_____ and Miguel Korzeniewicz. (1994) *Commodity Chains and Global Capitalism*. Westport, CT: Praeger.

Ghadar, Fariborz, William H. Davidson, and Charles S. Feigenoff. (1987) *U.S. Industrial Competitiveness: The Case of the Textile and Apparel Industries*. Lexington, MA: D.C. Heath and Company.

Guhathakurta, Subhrajit. (1994) "Electronics Policy and the Television Manufacturing Industry: Lessons from India's Liberalization Efforts." *Economic Development and Cultural Change*, Vol.42, No.4, 845-868.

Helleiner, G.K. (1989) "Transnational Corporations and Direct Foreign Investment." In *Handbook of Development Economics*, Volume II, edited by Hollis Chenery and T.N. Srinivansan, pp. 1441-1475. Amsterdam: North Holland.

Herman, Bruce G. (1998) "Sew what? The New York apparel industry in the global economy: Inevitable decline or possibilities for industrial upgrade?" Paper presented to International Institute for Labour Studies workshop on Global Production and Local Jobs: New Perspectives on Enterprise Networks, Employment and Local Development Policy, Geneva, March 9-10.

Hill, Hal, "The Indonesian Textiles and Garments Industries: Structure, Developments, and Strategies," in Meyanathan, ed., *Managing Restructuring in the Textile and Garment Subsector*, pp. 139-174.

Hoffman, Kurt. (1985) "Clothing, Chips and Competitive Advantage: The Impact of Microelectronics on Trade and Production in the Garment Industry." *World Development*, vol. 13, No. 3, pp. 371-392.

_____ and Howard Rush. (1988) *Micro-electronics and Clothing: The Impact of Technical Change on a Global Industry*. New York: Praeger.

Hughes, Julia K. (1998) "Sourcing Trends: Looking Ahead to 2000." Presentation to the 10th Annual Trade and Transportation Conference, U.S. Association of Importers of Textiles and Apparel, New York, New York. Mimeo.

Institute of International Finance. (1999) "Capital Flows to Emerging Market Economies." http://www.iif.com/PublicPDF/cf_0499.pdf. April 25.

International Financial Statistics Yearbook. (Several years) Washington DC: IMF.

International Labour Organization. (1996) *Globalization of the footwear, textiles and clothing industries*. Report for discussion at the Tripartite Meeting on the Globalization of the Footwear, Textiles and Clothing Industries: Effects on Employment and Working Conditions. Geneva: ILO.

International Monetary Fund. (1997) *World Economic Outlook May 1997: Globalization Opportunities and Challenges*. Washington, DC: The International Monetary Fund.

Jones, Jackie. (1998) "Apparel Sourcing Strategies for Competing in the U.S. Market." *Industry, Trade, and Technology Review*. Washington, D.C.: U.S. International Trade Commission, December.

Kaplinsky, Raphael. (1994) "From Mass Production to Flexible Specialization: A Case Study of Microeconomic Change in a Semi-industrialized Economy," *World Development*, vol. 22, No. 3, pp. 337-353.

Kim, Ji-Hong. (1994) "Restructuring of the Textile and Garment Industry in Korea." In Meyanathan, ed., *Managing Restructuring in the Textile and Garment Subsector*, pp. 175-196. EDI Seminar Series. Washington, DC: The World Bank.

Ko, Eunju and Doris H. Kincade. (1998) "Product Line Characteristics as Determinants of Quick Response Implementation for U.S. Apparel Manufacturers," *Clothing and Textile Research Journal*, vol. 16, no. 1: 11-18.

Meyanathan, Saha Dhevan, ed. (1994) *Managing Restructuring in the Textile and Garment Subsector: Examples from Asia*. EDI Seminar Series. Washington, DC: The World Bank.

Park, Young-Il and Kym Anderson. (1991) "The Rise and Demise of Textiles and Clothing in Economic Development: The Case of Japan." In *Economic Development and Cultural Change* 39:3, 531-548. April.

Philippine Development Magazine. (1991) "As Investment Increase: Electronics Industry Leads Industrialization Thrust." Office of the Director-General of the National Economic and Development Authority.

Pine, B. Joseph. (1993) *Mass customization: The new frontier in business competition*. Boston: Harvard Business School Press.

Piore, Michael J. and Charles F. Sabel. (1984) *The Second Industrial Divide: Possibilities for Prosperity*. Basic Books.

Porter, Michael. (1990) *The Competitive Advantage of Nations*. New York: Free Press.

Raffaelli, Marcelo and Tripti Jenkins. (1995) *The Drafting History of the Agreement on Textiles and Clothing* Geneva: International Textile and Clothing Board.

Rayner, Bruce. (1998) "Promising Lands." *Electronic Business*. <http://www.ebtmag.com/registrd/issues/9802/0298site.htm>

Rhee, Yung Whee and Thérèse Belot. (1990) *Export Catalysts in Low-Income Countries: A Review of Eleven Success Stories*. World Bank Discussion Papers No. 72. Washington, DC: World Bank.

Roemer, Michael and Mary Kay Gugerty. (1997) *Does Economic Growth Reduce Poverty? Presentation Paper*. CAER II Discussion Paper No. 4. Cambridge, MA: Harvard Institute for International Development, April.

Salinger, B. Lynn. (1997) "Factors Determining Competitiveness of African Economies and Measurement Methods: Case of the South African Clothing Sector," paper presented to the African Industrial Policies Research Network General Assembly, Douala (Cameroun), June 2-7.

_____. (1998) "Evolution of Global Manufacturing, Current Developments in World Trade and Investment, Qualitative Competitiveness Analysis, and Examples of Price Distortions: Workshop Lecture Notes." Workshop on Trade Policy and Competitiveness Analysis, Hanoi, July 31-August 7, 1998.

_____, Abdoul W. Barry, and Selina Pandolfi. (1997) *Pursuing the Africa Growth and Opportunity Act: Countering the Threat of Textile and Apparel Transshipment Through Africa*. EAGER/Trade Regimes and Growth Project final paper. Cambridge, MA: Associates for International Resources and Development.

_____, Diane P. Flaherty, and Haroon Bhorat. (1998) "Promoting the Competitiveness of Textiles and Clothing Manufacture in South Africa." Preliminary report, EAGER/Trade Regimes and Growth Project. Presented in Johannesburg, February.

_____, Anatolie Marie Amvouna, and Deirdre Murphy Savarese. (1998) "New Trade Opportunities for Africa." African Economic Policy Discussion paper No. 6. Prepared for USAID's EAGER/Trade Regimes and Growth Project. Cambridge, MA: Associates for International Resources and Development.

Shelton, Linda and Robert Wallace. (1996) "World Textile and Apparel Trade: A New Era." *Industry, Trade, and Technology Review*. Washington, D.C.: U.S. International Trade Commission, October.

Simon, Denis Fred. (1992) "Sparkling the Electronics Industry." *The China Business Review*, 22-28.

Singh, Harinder and Kwang W. Jun. (1995) "Some New Evidence on Determinants of Foreign Direct Investment in Developing Countries." International Finance Division, International Economics Department. Washington, DC: The World Bank.

Spar, Debora L. (1998a) "The Spotlight and the Bottom Line: How Multinationals Export Human Rights." *Foreign Affairs*, volume 77, No. 2 (March/April): 7-12.

_____. (1998b) "Attracting High Technology Investment: Intel's Costa Rican Plant." Foreign Investment Advisory Service. Occasional Paper 11. Washington, DC: The World Bank.

_____. (1999c) "Foreign Investment and the Pursuit of Human Rights." *Challenge*, Vol. 42, No.1, 1-26.

Stryker, J. Dirck and Selina Pandolfi. (1997) *Impact of Outward-Looking Market Oriented Policy Reform on Economic Growth and Poverty*. Prepared for USAID under CAERII project.

_____ and Selina Pandolfi. (1998) "Effects of Policy Reform on Investment, Trade, and Growth in Sub-Saharan Africa." Preliminary Report, EAGER/Trade Regimes and Growth Project. Presented in Dakar, November 1998. Cambridge, MA: Associates for International Resources and Development.

Sturgeon, Timothy. (1997) "Turnkey Production Networks: A New American Model of Industrial Organization?" BRIE Working Paper 92A. Berkeley Roundtable on the International Economy, University of California at Berkeley.

_____. (1998) "Network-Led Development and the Rise of Turn-Key Production Networks: Technological Change and the Outsourcing of Electronics Manufacturing." Massachusetts Institute of Technology, December.

Sullivan, Pauline and Jikyeong Kang. (1999) "Quick Response Adoption in the Apparel Manufacturing Industry: Competitive Advantage of Innovation," *Journal of Small Business Management*, vol. 37, No. 1 (January): 1-13.

United Nations Conference on Trade and Development. (1993) *World Investment Report 1993: Transnational Corporations and Integrated International Production*. New York: United Nations.

_____. (1996) *World Investment Report 1996: Investment, Trade and International Policy Arrangements*. New York: United Nations.

_____. (1997) *World Investment Report 1997: Transnational Corporations, Market Structure and Competition Policy*. New York: United Nations.

_____. (1999) "Foreign Direct Investment into Developing Asia Has Weathered the Storm." UNCTAD Press Release TAD/INF/2803. <http://www.unctad.org/en/press/pr2803en.htm>. 27 April.

United Nations, Economic Commission for Africa. (1999) "The Challenges of Financing Development in Africa: Theme Paper." Prepared for ECA's 33rd session of the Commission, 6-8 May. Addis Ababa, Ethiopia. <http://www.un.org/Depts/eca/joint/themep.htm>.

Vogel, Thomas T. Jr. (1998) "Costa Rica's Sales Pitch Lures High-Tech Giants Like Intel and Microsoft," *The Wall Street Journal*. April 2, A18.

Weil, David. (1995) "Information Integration and Emerging Competitive Dynamics in the U.S. Apparel Chain." Presentation to the Federal Trade Commission Hearing on Global and Innovation-Based Competition, October 15.

Whalley, John. (1995) "Agreement on Textiles and Clothing." Chapter 6 in *The New World Trading System: Readings*, 73-82. Paris: Organisation for Economic Co-operation and Development.

Wilhelms, Saskia K. S. (1998) "Foreign Direct Investment and its Determinants in Emerging Economies", EAGER/Trade Regimes and Growth Project final paper. Cambridge, MA: Associates for International Resources and Development.

World Bank. (1995) *World Development Report 1995: Workers in an Integrating World*. New York: Oxford University Press.

_____. (1998) *World Development Indicators 1998*. Washington, DC: The World Bank.

World Trade Organisation. Textiles Monitoring Body. (1997) *Comprehensive Report of the Textiles Monitoring Body to the Council for Trade in Goods on the Implementation of the Agreement on Textiles and Clothing During the First Stage of the Integration Process*. Document G/L/179. July 31.

_____. Council for Trade in Goods. (1998) *Major Review of the Implementation of the Agreement on Textiles and Clothing in the First Stage of the Integration Process*. Document G/L/224. February 19.

Yeats, Alexander J. (no date) "Just How Big Is Global Production Sharing?" Research paper, Development Research Group, World Bank.

Appendix A: Clothing Industry Questionnaire

Promoting Foreign Direct Investment and Labor-Intensive, Manufacturing Exports in
Developing Countries:

Understanding Factors Motivating Off-shore Investment by
Textile and Apparel Firms

Survey developed and administered by

Lynn Salinger, Senior Economist
Selina Pandolfi, Economist

Associates for International Resources and Development
185 Alewife Brook Parkway
Cambridge, MA 02138

Tel. 617 864 7770
Fax 617 864 5386
email lsalinger@aird.com, spandolfi@aird.com
www.aird.com

This survey is administered as part of a broader study jointly conducted by the Harvard Institute for International Development and Associates for International Resources and Development. The support of the U.S. Agency for International Development/Global Bureau/Office of Emerging Markets is gratefully acknowledged.

I. Firm Identification**I.a. Company Name:**

--

I.b. Address:

--

I.c. Contact Information:

Phone:	
Fax:	
Email:	

I.d. Survey Respondent Name and Position:

--

I.e. Follow up preferences:

I would like to meet or discuss by phone	
Send me a copy of your draft, so I may comment	
Send me a copy of your final report	

I.f. Company Type (check as appropriate):

Textile manufacturer	
Apparel Manufacturer: brand label	
Apparel Manufacturer: private label	
Sourcing agent	
Retailer	
Other:	

I.g. Please indicate key products produced/imported by your company, with an approximate indication of the relative importance of each:

	SITC code	Percentage of business
Broad wovens		
Narrow fabrics		
Knit fabrics		
Mens' and boys' wear		
Women's and girls' wear		
Foundation garments		
Home textiles		
Other:		
Total		100%

I.h. We would like to get a sense of how large your firm is, relative to the broader market. Please supply the indicators requested below, or alternatives that your firm may follow.

Annual sales (Volume in US\$), 1998
Annual sales (Volume in US\$), 1997
Average Volume of Import Order (US\$)
Number of U.S. employees:
Number of overseas employees:

II. Description of Firm's Overseas Operations

II.a. What is the nature of your firm's linkages to the international market? How have these evolved over time? What are your plans for the medium term in terms of where you will be? Please describe.

Own/manage overseas manufacturing plants
Lease overseas manufacturing facilities
Take advantage of 9802 (formerly 807) trade
Source directly from overseas manufacturers
Source indirectly via international brokers
Other

II.b. Please indicate the different stages of the designing and manufacturing process which your firm executes and at what level (approximate) they take place in-house or off-site.

Key: 1=none, 2=25%, 3=50%, 4=75%, 5=100%

	In House	Out-sourced: US	Out-sourced:Europe Japan	Out-sourced:Other
Design:	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Cutting:	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Assembly:	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Embroidery:	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Finished prod:	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

II.c. Who or what division in your firm decides which countries will be suitable overseas partners?

--

II. d. If you own/manage overseas manufacturing plants, how often do you build a new plant overseas?

--

II. e. In which countries have you invested/are you operating?

List your five most important partners, identifying what % of total overseas operations each of these represents.

Country	Invested in	Operate in
1.		
2.		
3.		
4.		
5.		
Total	100%	100%

Country (repeat as per above)	Date of first investment	Date of last investment
1.		
2.		
3.		
4.		
5.		
Total		

Country (repeat as per above)	Value of cumulative investments	
1.		
2.		
3.		
4.		
5.		
Total		

II.f. If you have your own manufacturing facilities abroad, what are the major components of your foreign country costs? (indicate rough percentage e.g. 90% labor, 10% administration, etc.)

Cost Component	Startup	Production
Construction		
Skilled Labor		
Unskilled Labor		
Capital/interest		
Other:		

II.g. Would you characterize your international investment/commercial partner relations as stable or constantly evolving?

Relations by country
Relations by firm/supplier

II. h. How long does it generally take for you to make a decision to enter a new country (weeks, months, years) (indicate for as many as apply):

For setting up a new manufacturing facility as sole investor
For setting up a new manufacturing facility as joint venture partner
For taking over an existing manufacturing facility
For entering into a joint venture with an existing facility
For signing on with a new commercial partner (firm)
Other:

III. Overseas Manufacturing/Sourcing Process

III. a. When did your firm begin to manufacture or source internationally?

--

III. b. What percentage of your firm's total sales (shipments) are sourced today from abroad?

--

III. c. What was the initial motivation for moving off-shore for some or all of your supply?

--

III. d. To what extent are the following factors important in influencing the choice of foreign partner country as part of your firm's overseas manufacturing/sourcing decisions? Please, circle one choice.

Key:

Entry = factors affecting decision to enter a foreign country

Operations = factors affecting day to day operations in foreign country

Exit = factors affecting decision to exit a foreign country once you are already operating there

1=not at all, 2=somewhat important, 3=important, 4=very important, 5=extremely important

Costs	Entry	Operations	Exit
Unskilled labor costs	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Skilled labor costs	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Labor availability	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Labor force turnover/stability	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Fringe and benefits costs	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Costs of in-house labor training	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Overhead costs (land, rent, electricity, telecommunications)	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Level of inflation in foreign country	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Exchange rate stability in foreign country	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Convertibility of local currency	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Cost/availability of local investment capital	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Cost/availability of local working capital	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Cost/availability of export credits and insurance	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Geographic location (proximity to end market)	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Geographic proximity to points on global supply rte	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Cost of domestic freight from production to FOB	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Cost of international freight FOB-to-CIF US	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Other:	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Tax rates and incentives	Entry	Operations	Exit
Turnover or sales tax rate	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Excise tax rate	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Corporate profit tax rate	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Import tax/duty rate on clothing	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Export tax/duty rate on clothing	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Import tax/duty rate on textiles	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Export tax/duty rate on textiles	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Import tax/duty rate on other inputs/trims	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Export tax/duty rate on other inputs/trims	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Import duty on final product into your target overseas markets	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Employee payroll tax rate	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Employer payroll tax rate	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Personal income tax rate	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Tax holidays	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Capital depreciation rules	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Existence of double taxation treaty	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Other:	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Local labor/management skills	Entry	Operations	Exit
Machinists	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Labor relations management	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Financial management	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Export management	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Manufacturing engineering	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Information systems management	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Business/administration	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Availability of government-sponsored labor training programs	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Availability of private labor training programs	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Power of unionized labor	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Flexibility of local labor regulations	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
History of labor unrest or general strikes	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Demonstration of strong work ethic	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Other:	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Production and marketing infrastructure	Entry	Operations	Exit
Power supplies unreliable less than once a week	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Power supplies unavailable once a week or more	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Telecommunications connections are unreliable	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
New telecommunications hook-ups take long time	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Availability of local Internet access	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Transport from factory to port is unreliable	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Quality packaging is unavailable from domestic sources	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Quality packaging from domestic sources is expensive	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Sea freight is unavailable or infrequent to desired market	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Sea freight is costly	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Air freight is unavailable or infrequent to desired market	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Air freight is costly	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Road quality is poor or insecure	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Warehousing facilities are outmoded	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Port facilities are outmoded			
Customs clearance is cumbersome	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Ancillary services (marketing, accounting, packaging, design, trade brokering, etc services) are weak or non-existent	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Other:	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Regulatory and business environment	Entry	Operations	Exit
Availability of export processing zones or "virtual EPZs"	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Availability of fast track permit process	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Presence of investment promotion center	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Existence of bilateral investment treaty w/ the U.S. providing investment protection for foreign investors	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Foreign capital/profits repatriation regulations	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Dividend remittance policies	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Foreign ownership regulations	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Joint venture regulations	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Licensing regulations	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Intellectual property rights are enforced	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Costly to negotiate licenses, permits, tax assessments, etc	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Government regulations are fully enforced	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Government regulations are not difficult to interpret	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Dialogue exists betw local business, labor, govt	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Personal lobbying by high-level local govt officials	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Level of corruption is high	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Petty crime and theft are widespread	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Organized crime imposes significant costs on business			
Police are ineffective at safeguarding personal security	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Ability to file lawsuits against the government at independent and impartial courts	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Ability to file lawsuits against other foreign or local private firms at independent and impartial courts	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Host government regulatory or business environment commitments to the firm, such as:	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Availability of duty drawbacks, rebates, or exemptions for importing inputs	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Availability of bonded warehouses for importing inputs	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Availability of local tax advantages	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Efficiency of local banking institutions	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Local banks are healthy with sound balance sheets	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Lending by local banks not based on personal relations	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Domestic interest rates are regulated	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Availability of letters of credit	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
International banks are present	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Ease of convertibility of foreign into local currency	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Political stability	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Democratic form of government	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Country's diplomatic relationship with the U.S.	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Country's environmental regulations	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Other:	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

U.S. government institutions	Entry	Operations	Exit
Availability of insurance programs like OPIC	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Availability of investment guarantees	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Availability of U.S. tax incentives, such as:	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Availability of preferential trade agreements with U.S., such as:			
NAFTA	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
CBI	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Other:	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Existence of dual tax treaty	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
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Reputation of country	Entry	Operations	Exit
Presence of other foreign textile/clothing investors in the country	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Availability of local investors for joint ventures, co-financing	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Experience of previous investors in the country	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Status of existing investors	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Presence of local investors	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Reputation of the country's textile/clothing exports on world market	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Democratic government institutions function	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Legal and political institutions are not stable	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Good diplomatic relations with the U.S.	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Overall image of country in the eyes of U.S. consumers <i>If so, what are the important aspects of this image (e.g., country's tourism image, handicrafts image, cultural image, etc.)</i>	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Other:	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Reputation of local partner firms	Entry	Operations	Exit
Long-term successful commercial relations with other foreign textile/clothing investors	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Consistent high quality in firm's products	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Ability of firm to deliver product on timely basis to international customers	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Ability of firm to adapt run characteristics (size, color, design) quickly and efficiently	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Good labor relations employed by the firm <i>If so, define "good":</i>	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Good environmental practices employed by firm <i>If so, define "good":</i>	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Availability of state-of-the-art design/manufacture machinery	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Computerization of design	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Computerization of manufacturing	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Computerization of orders/sales management	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Computerization of customer relations	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Degree of Internet interface for internal management	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Degree of Internet interface for international communications	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Other:	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Personal relations	Entry	Operations	Exit
Personal experiences of firm's decision makers	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Ethnic history (e.g., commercial linkages of Indians in East Africa)	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Personal connections to individuals in host country	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Other:	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

IV. Summary Rankings

IV.a. Overall, please list the top five concerns you weigh when choosing a new international partner country with which to do business:

1.
2.
3.
4.
5.

IV. b. Overall, please list the top five concerns you weigh when choosing a new international partner firm with which to do business:

1.
2.
3.
4.
5.

IV. c. Please list one to five examples of developing countries that were considered for investment and rejected. Explain shortly why.

1.
2.
3.
4.

5.

Additional comments on any part of this survey and/or suggestions to USAID for industry-specific policies to encourage in low income countries (use back of form, if necessary)

Appendix B: List of Participating Clothing Firms

AIRD sent surveys to members of the U.S. Association of Importers of Textiles and Apparel. Reminder phone calls were made to all. The following are those firms with which substantive follow-up interviews were possible.

Vanity Fair Corporation
Reading, PA
Manufacturer

Kids “R” Us
Paramus, NJ
Manufacturer and retailer

Gruppo Finanziario Tessile (GFT)
New York, NY
Manufacturer

Baby Togs
New York, NY
Manufacturer and retailer

CGS Industries
Long Island, NY
Manufacturer

Four Star Distribution
San Clemente, CA
Manufacturer

Frederick Atkins, Inc.
New York, NY
Retailer

Appendix C: Electronics Industry Questionnaire

Promoting Foreign Direct Investment and Labor-Intensive, Manufacturing Exports in
Developing Countries:

Understanding Factors Motivating Off-shore Investment by Electronics Firms

Survey developed and administered on behalf of:
**Associates for International Resources and
Development**
185 Alewife Brook Parkway
Cambridge, MA 02138

By:
Margaret McMillan, PhD
Rebecca Mayer, Research Assistant
Department of Economics, Tufts University
Tel. 617 627 3137 Fax 617 627 3917
Email: mmcmilla@emerald.tufts.edu,
rmayer01@emerald.tufts.edu

Forms Enclosed:

1. Executive Opinion Survey
2. Manufacturing Investment Survey

Return Completed Surveys to Dr. McMillan by February 19th, 1999

Sponsor: *This survey is administered as part of a broader study jointly conducted by the Harvard Institute for International Development and Associates for International Resources and Development. The study is being financed by the U.S. Agency for International Development (USAID) in order to promote broad-based economic growth in developing countries. The information will be used by USAID to advise developing country policymakers regarding the kinds of policies and operating conditions required to make their countries most attractive to foreign investors. The support of the USAID/Global Bureau/Office of Emerging Markets is gratefully acknowledged.*

Why your firm? *We are seeking input from industry leaders on specific policies to encourage in developing countries that seek to attract electronics manufacturing facilities.*

Survey goal: *This questionnaire is designed to identify the predominant modes of entry into developing countries by firms in the electronics industry today, such as direct investment in manufacturing plants, joint ventures, subcontracting arrangements, or other activities that generate export-oriented employment in developing countries. The second goal of the survey is to understand the process of overseas site selection. We thank you for your participation and note that the results of this study will help developing countries create a more attractive environment for companies like yours.*

Completed Survey: Please return the completed survey on or before **February 19th, 1999**, to Dr. Margaret McMillan, 2005 Commonwealth Avenue, #3, Boston, MA 02135 or fax it to her at (617) 627-3917. Should you require more information on the survey, please contact Dr. Margaret McMillan at (617) 627-3137 or mmcmilla@tufts.edu. All responses will be treated as fully confidential. We will be pleased to send a copy of our final report to all executives who return a completed survey to us.

Part I: Executive Opinion Survey

I. Firm Identification

Company Name:

Survey Respondent's Name:

Position:

Contact Address:

Phone:

Fax:

E-mail:

1. What type(s) of products does your company manufacture? (check all that apply)

- ☐ Semiconductors and Electronic Components
- ☐ Computers, Computer Storage Devices and Peripheral Equipment
- ☐ Communications Equipment
- ☐ Household Audio and Video
- ☐ Household Appliances

2. Where does your firm sit in the industrial chain?

- ☐ designs and manufactures products and markets them abroad
- ☐ subcontracts manufacturing for international marketing firms and OEMs
- ☐ manufactures components on subcontract for international manufacturers
- ☐ other (describe) _____.

3. Do any of the following acronyms apply to your firm's line(s) of business (check all that apply)

- ☐ OEM or Original Equipment Manufacturer
- ☐ CM or contract manufacturer
- ☐ other (specify) _____.

4. List the main products or product categories sold by your company or division:

Product: _____

A. Type of good: ☐ intermediate ☐ final

B. Product Life Cycle: ☐ Less than one year ☐ 1-2 yrs ☐ 3-5 yrs ☐ 5+ yrs

Product: _____

A. Type of good: ☐ intermediate ☐ final

B. Product Life Cycle: ☐ Less than one year ☐ 1-2 yrs ☐ 3-5 yrs ☐ 5+ yrs

Product: _____

A. Type of good: ☐ intermediate ☐ final

B. Product Life Cycle: ☐ Less than one year ☐ 1-2 yrs ☐ 3-5 yrs ☐ 5+ yrs

Other (specify): _____.

5. Who or what division in your firm decides which countries will be suitable overseas partners?

6. Who at headquarters is responsible for maintaining daily contact with the managers of your overseas plants/partners?

--

II. Description of Firm's Overseas Operations

1. Approximately what percent of your firm's manufacturing is executed via the following types of arrangements?

Manufacturing Arrangement	% of Total Manufacturing	% in Developing Countries
Direct investment		
Joint ventures		
Outsourcing/Subcontracting		
Turnkey projects		
Technology licensing/transfer		
Other (describe):		

2. What are the major components of your costs when investing abroad? (indicate rough percentage e.g. 90% labor, 10% administration, etc.)

Cost Component	Startup	Production
Building		
Skilled Labor		
Unskilled Labor		
Administrative		
Other:		

3. Give one or two examples of developing countries that were considered for investment and why they were rejected.

--

4. Give one or two examples of manufacturing arrangements in developing countries that failed and why.

--

III. Factors that influence entry into a developing country

For the following sections, please indicate on a scale of 1 to 5 how important each factor is in the decision to establish manufacturing arrangements in a particular developing country.

1= not at all important, 2=somewhat important, 3=important, 4=very important, 5=extremely important

A. Labor Force	Not Important	→	Important
1. Unskilled labor costs and availability			
2. Skilled labor costs and availability			
3. Labor force turnover/stability			
4. Fringe and benefits costs			
5. Costs of in-house labor training			
6. Flexibility of labor regulations			
7. Power of unionized labor			
8. History of labor unrest or general strikes			
9. Local secondary education meets the needs of business			
10. Local university education meets the needs of business			
11. Prevalence of illness and disease among employees (e.g. AIDS)			
12. Adequacy of the country's healthcare system			
13. Other:			

B. Technical and Marketing Infrastructure	Not Important	→	Important
14. Availability of technically skilled labor specializing in:			
A.			
B.			
C.			
15. Availability of export processing zones or "virtual EPZs"			
16. Supplies and raw materials are easily imported			
17. Supplies and raw materials must be available locally			
18. Overhead costs (land, rent, electricity, telecommunications)			
19. Geographic proximity to market			
20. Geographic proximity to points on global supply route			
21. Cost of domestic freight from production to FOB			
22. Cost of international freight FOB-to-CIF US			
23. Power supplies are unreliable less than once a week			
24. Power supplies are unavailable once a week or more			
25. Telecommunications connections are unreliable			
26. New telecommunications hook-ups take a long time			
27. Transport from factory to port is unreliable			
28. Quality packaging is unavailable from domestic sources			
29. Quality packaging from domestic sources is expensive			

30. Sea freight is unavailable or infrequent to desired market
31. Sea freight is costly
32. Air freight is unavailable or infrequent to desired market
33. Air freight is costly
34. Road quality is poor or insecure
35. Warehousing facilities are outmoded
36. Port facilities are outmoded
37. Customs clearance is cumbersome
38. Ancillary services (marketing, accounting, packaging, etc) are weak or non-existent
39. Other:

B. Regulatory & Business Environment	Not Important	→	Important
40. Availability of fast track permit process			
41. Presence of investment promotion center			
43. Personal lobbying by high-level local government officials			
44. Existence of a bilateral investment treaty with the U.S.			
45. Foreign ownership regulations			
46. Joint venture regulations			
47. Licensing regulations			
48. Host government makes regulatory or business environment commitments to the firm, such as:			
A.			
B.			
C.			
49. Availability of duty drawbacks, rebates, or exemptions for importing inputs			
50. Availability of bonded warehouses for importing inputs			
51. Government regulations are fully enforced			
52. Government regulations are not difficult to interpret			
53. There exists a dialogue between local business, labor and government			
54. Income inequality is high			
55. Domestic investment level in the country is high			
56. Domestic savings level in the country is high			
57. International banks are present			
58. Lending institutions do not make loans based on existing personal relationships			
59. Lending institutions service smaller firms			
60. Domestic interest rates are regulated			
61. Local banks are healthy with sound balance sheets			
62. Many international firms have a presence in this country			
63. The country is a democracy			
64. Country's diplomatic relationship with the U.S.			
65. Country's environmental regulations			
66. Competitors already manufacture in this country			
67. There is a viable market in this region for our final product			
68. Intellectual property rights are enforced			
69. Other:			

C. Tax Rates and Incentives	Not Important	→	Important
70. Corporate turnover/sales tax rate			
71. Excise tax rate			
72. Corporate profit tax rate			
73. Import tax/duty rate on manufacturing inputs			
74. Export tax/duty rate on manufacturing outputs			
75. Employee payroll tax rate			
76. Employer payroll tax rate			

77. Personal income tax rate
78. Tax holidays
79. Opportunities for tax evasion
80. Capital depreciation rules
81. Level of inflation in foreign country
82. Exchange rate stability in foreign country
83. Convertibility of local currency
84. Cost/availability of local investment capital
85. Cost/availability of local working capital
86. Reasonably priced export credits and insurance
87. Investment protection schemes for foreign investors
88. Foreign capital/profits repatriation regulations
89. Dividend remittance policies
90. Host government offers financial subsidies/incentives such as:
A.
B.
C.
91. Availability of insurance programs like OPIC
92. Availability of investment guarantees
93. Availability of U.S. tax incentives, such as:
A.
B.
C.
94. Availability of preferential trade agreements with U.S., such as:
NAFTA
CBI
Other:
95. Dual tax treaty
96. Other:

IV. Factors that determine exit from a developing country

For the following sections, please indicate on a scale of 1 to 5 how important each factor is in contributing to the decision to exit manufacturing arrangements in a particular developing country.

1= not at all important, 2=somewhat important, 3=important, 4=very important, 5=extremely important

A. Labor Force & Technical Infrastructure	Not Important	Important
1. Unskilled labor costs in the country rise significantly		
2. Unskilled labor costs elsewhere in the world fall significantly		
3. Skilled labor costs in the country rise significantly		
4. Skilled labor costs elsewhere in the world fall significantly		
5. Locals do not exhibit a strong work ethic		
6. We are prohibited from setting up training centers		
7. Local workers do not have sufficient education to benefit from further training		
8. The administrative burden of doing business is unusually high		
9. Hiring and firing practices are not flexible		
10. Local financing for working capital is not available		
11. Railway system is nonfunctioning		
12. Supply of electricity is unreliable		
13. Limited air transport infrastructure		
14. Water availability becomes scarce		
15. Overhead is costly (e.g. land, rent, electricity, telecommunications)		
16. Internet access is costly/unreliable		
17. Telecommunications and data services are unreliable		
18. Other:		

B. Regulatory & Business Environment

Not Important



Important

1. State interferes in private business
2. Incompetence of personnel in the private sector
3. Incompetence of personnel in the public sector
4. Hidden import barriers (other than published tariffs and quotas)
5. Costly to negotiate licenses, regulations, permits or tax assessments
6. Citizens do not respect legal means of adjudicating disputes
7. My firm is not able to file a lawsuit against the government at independent and impartial courts
8. My firm is not able to file a lawsuit against other foreign or local private firms at independent and impartial courts
9. The legal system failed to enforce contracts
10. Government corruption imposes significant costs on business
11. Organized crime imposes significant costs on business
12. Petty crime and theft are widespread
13. Rules, laws and government policy are continually changing
14. The legal and political institutions are not stable
15. The police are not effective at safeguarding personal security
16. We feel that new governments will not honor obligations of previous regimes
17. Civil unrest or war breaks out in a remote region of the country
18. Civil unrest or war breaks out in the country's main urban centers

V. We are interested in your opinion

1=Agree Strongly 2=Agree Somewhat 3=Disagree Somewhat 4=Disagree Strongly

Agree Disagree

	1	2	3	4
1. The manufacturing capacity needs of my industry subsector are growing.	1	2	3	4
2. Electronics assembly is the most feasible first step into electronics manufacturing for low-income countries outside of East Asia.	1	2	3	4
3. Specific policies or incentive schemes such as tax holidays or export processing zones are unlikely to attract my firm to low-income countries.	1	2	3	4
4. We would not consider establishing a manufacturing facility in a low-income country with no previously developed electronics manufacturing industry.	1	2	3	4
5. Company restructuring or global business factors unrelated to a specific country's policies are very likely to affect our decisions to enter and exit developing countries				
6. We will be considering a manufacturing investment in Africa over the next five years.				

2. Overall, please list the top five concerns you weigh when choosing a new international partner country with which to do business:

1.
2.
3.
4.
5.

3. Overall, please list the top five concerns you weigh when choosing a new international partner firm with which to do business:

1.
2.
3.
4.
5.

4. Additional comments on any part of this survey and/or suggestions to USAID for industry-specific policies to encourage in low income countries (use back of form if necessary):

Appendix D: List of Participating Electronics Firms

Alliance Semiconductor	Amkor Technology, Inc.	Anadigics
Applied Materials, Inc	Applied Materials, Inc	Ciena
C-mac	Compaq	Emcore
Etec Systems, Inc.	Fluoroware Asia Pacific	FSI International, Inc.
General Instrument	Hewlett-Packard Company	IBM Corporation
Lucent Technologies	National Semiconductor	Photronics, Inc.
Sci Atlanta	Soletron Corporation	Tokyo Electron Limited
Viasystems	3COM Corporation	3Dfx Interactive, Inc.
Acuson	Advanced Micro Devices	Aeroflex
AMP Inc.	Aseco Corporation	Aspect Telecommunications
Auspex Systems Inc.	Bissell	California Amplifier
C-cor	CHS Electronics	Cisco Systems, Inc.
Custom Tracks Corporation	Dallas Semiconductor	Data General Corporation
Discreet Logic	EA industries	Eaton
Electronic Data Systems	EMC Corporation	Espey Manufacturing
ESS Technology, Inc.	Exabyte	Fairchild Semiconductor Corp.
Gasonics Intl	General Electric Company	Harris Corporation
Helix Technology	Honeywell Deaters	IDT
IEC Electronics Corp.	IMP	Integrated Circuit Systems
Integrated Measurement	Integrated Silicon Solution, inc.	Intel Corporation
IPC Information	Keytronic	Komag Incorporated
Lexmark International	LTX Corporation	Mentor Graphics
Merix	Methode Electronics	Micrel
Micron Corporation	Microchip Technology	Micron Technology
Microwave Power Devices	Motorola Semiconductor Prod.	National Instruments
Newbridge Networks Corporation	Novellus Systems, Inc.	Odetics
Packard Bell	Pairgain Technologies	Pitney Bowes
Plantronics	Powerwave Technologies	PRI Automation, Inc.
Rambus	RF Power Products, Inc.	Sandisk
Sanmina Corp.	Silicon Graphics	Silicon Storage Technology
Smart Modular Technologies	Smart Technologies	Spire Corporation
Storage Technology	System Software	Tech Data
Tektronix	Thermo Electron	TriQuint Semiconductor
Vishay Intertechnology	White Electronic Designs	Zoom Telephonics

Appendix E: Electronics Industry Tables and Figures

Table E.1 - Strategic Alliances in Information Technology, 1980-1994

	Europe- Japan	Europe- U.S.	Japan- U.S.	Europe- Europe	Japan- Japan	U.S.- U.S.
1980	5	20	8	13	4	18
1981	7	23	16	18	8	23
1982	9	37	22	17	4	18
1983	12	19	38	17	15	32
1984	14	41	42	40	7	56
1985	13	44	27	60	10	47
1986	19	46	26	52	15	54
1987	6	48	29	46	7	76
1988	11	62	23	48	7	88
1989	8	56	28	45	7	89
1990	15	42	29	25	9	102
1991	12	52	29	25	9	113
1992	12	52	29	25	9	113
1993	10	48	34	14	4	116
1994	12	63	30	9	9	154

Source: Dun and Bradstreet, 1999

Table E.2: Tabulation of Survey Results

List of Participating Companies

- | | | |
|---------------------------|---|---------------------------------------|
| 1. 3COM Corporation | 15. Data General Corporation | 28. IBM Corporation |
| 2. 3Dfx Interactive, Inc. | 16. Eaton | 29. IMP |
| 3. Acuson | 17. Electronic Data Systems | 30. Integrated Silicon Solution, inc. |
| 4. Advanced Micro Devices | 18. EMC Corporation | 31. Intel Corporation |
| 5. Alliance Semiconductor | 19. Emcore | 32. Lucent Technologies |
| 6. Amkor Technology, Inc. | 20. ESS Technology, Inc. | 33. National Semiconductor |
| 7. Anadigics | 21. Etec Systems, Inc. | 34. Photonics, Inc. |
| 8. Applied Materials, Inc | 22. Fairchild Semiconductor Corporation | 35. Sci Atlanta |
| 9. Auspex Systems Inc. | 23. Fluoroware Asia Pacific | 36. Solelectron Corporation |
| 10. CHS Electronics | 24. FSI International, Inc. | 37. Tokyo Electron Limited |
| 11. Ciena | 25. General Instrument | 38. TriQuint Semiconductor |
| 12. Cisco Systems, Inc. | 26. Hewlett-Packard Company | 39. Viasystems |
| 13. C-mac | 27. Honeywell Deaters | |
| 14. Compaq | | |

Part I: Executive Opinion Survey

I. Firm Identification

- What type(s) of products does your company manufacture? (% of the companies that checked)
 (60) Semiconductors and Electronic Components
 (30) Computers, Computer Storage Devices and Peripheral Equipment
 (10) Communications Equipment
 (0) Household Audio and Video
 (0) Household Appliances
- Where does your firm sit in the industrial chain?
 (71) designs and manufactures products and markets them abroad
 (4) subcontracts manufacturing for international marketing firms and OEMs
 (21) manufactures components on subcontract for international manufacturers
 (4) other (describe) _____
- Do any of the following acronyms apply to your firm's line(s) of business
 (58) OEM or Original Equipment Manufacturer
 (34) CM or contract manufacturer
 (8) other (specify) _____
- List the main products or product categories sold by your company or division:

Main Product	Type of Good	Product Life Cycle (in years)
MR heads for HDD	INTERMEDIATE	<1
Communications Chips/Terminals		1-2
Lead Die		
MR sensors		
EPI Wafers		
WSFU products	INTERMEDIATE	3-5
Chip Level Custom ICs		
PCBs/Computers/Data		
Critical Fluid		
Materials Device Handling		
Communications Chips/Infrastructure	INTERMEDIATE	>5
PCBs - Telecoms		
Value Added Back Plane Assembly		
Microwave Components		
Printers		
Frequency Control	FINAL	<1
Computers		1-2
Microprocessors		
C-D-R recording media		
Microcircuits		3-5
RF distribution amplifiers	FINAL	
Optical Transmitters		
Test Instruments		
Analog Communication ICs		
Photomasks		
Bar Code Scanners	FINAL	
Mobile Computers		
Wireless LANs		
RF Electronics		>5
Set Tops	FINAL	
Radio Frequency Components		
Power Connection Products		

5. Who or what division in your firm decides which countries will be suitable overseas partner

- ❖ Each product group manager decides for her/his products
- ❖ CEO
- ❖ Key people are president, CFO, VP Strategic Business, VP sales
- ❖ Manufacturing partners are decided by the VP Operations. Product Development decided by Segment leaders.
- ❖ CEO and Senior staff
- ❖ VP Sales, VP Marketing, Partnering Department Personnel
- ❖ Divisional presidents input, approval by HQ organization
- ❖ Supply chain management organization
- ❖ SBU Management
- ❖ Japan/Asia Pacific Operations VP, European Operations VP
- ❖ Division SM or manufacturing manager
- ❖ Microelectronics business development
- ❖ CTMG division (central technology and manufacturing group), VP finance, CEO
- ❖ Corporate management
- ❖ Combination of business unit mgmt, business development, sales and manufacturing mgmt.
- ❖ Management team, local general managers, BDP
- ❖ President
- ❖ Top management
- ❖ Corporate & Operations Senior Management; Finance Senior Management
- ❖ Marketing and management
- ❖ Corporate in conjunction with geographical region and in country management
- ❖ Sales/Marketing and executive team for sales partners.

6. Who at headquarters is responsible for maintaining daily contact with the managers of your overseas plants/partners?

- ❖ Business managers for plants product lines
- ❖ VP of Operations
- ❖ Corporate VP of worldwide manufacturing and key product managers
- ❖ Three levels of involvement: Purchasing: For cost, contract negotiations. Production Control: For daily/weekly deliveries and schedules. Engineering: for process quality, engineering changes.
- ❖ VP Operations
- ❖ Marketing personnel, partnering department personnel
- ❖ CEO, CFO, VP Procurement, VP Sales and Marketing
- ❖ Supply chain management team, production management team
- ❖ SBU Manager
- ❖ Respective regional VP
- ❖ Sr. VP of CTMG and his direct staff, VP Fab Mfg-England, Israel, VP product Assembly-for East Facilities Singapore, Malaysia, etc., VP subcontract mfg-Singapore, China Taiwan
- ❖ Various-generally senior management president
- ❖ VP of Manufacturing for factories Business development for JV's
- ❖ Each of the regional presidents including Asia, Europe and America
- ❖ Business administration dept.
- ❖ President and Corporate VPs and Staff
- ❖ Mainly sales management and administration have daily contact

II. Description of Firm's Overseas Operations

1. Approximately what percent of your firm's manufacturing is executed via the following types of arrangements?

Manufacturing Arrangement	% of Total Manufacturing	% in Developing Countries
Direct investment	46.78	24.62
Joint ventures	28.31	27.37
Outsourcing/Subcontracting	18.41	39.25
Turnkey projects	4.75	1.67
Technology licensing/transfer	1.75	33.33

2. What are the major components of your costs when investing abroad? (indicate rough percentage e.g. 90% labor, 10% administration, etc.)

Cost Component	Startup	Production
Building	40.45	21.14
Skilled Labor	21.90	25.28
Unskilled Labor	7.50	24.23
Administrative	14.54	10.41
Other:	15.61	18.94
		materials, marketing

3. Give one or two examples of developing countries that were considered for investment but rejected and the reason they were rejected.

<u>Country</u>	<u>Reason Rejected</u>
China	❖ market acceptance of quality and safety of local investments - monitoring our customer's experiences
East Germany	❖ Lack of infrastructure
India	❖ market oppy not developing at pace to justify investment, political/economic uncertainty
Indonesia	❖ Political Instability
Korea	❖ Local economics downturn and low political stability
Malaysia	❖ Better tax alternatives existed elsewhere
Mexico	❖ costs too high ❖ not enough low skilled labor ❖ not enough industry expertise ❖ not strategically located ❖ greenfield less attractive ❖ Saturation of mfg base by contract manufacturers, availability of reliable water source and volume for mfg process
Philippines	❖ Political instability, inaccessibility, transport of materials and people difficult
Russia	❖ weak infrastructure, uncertain end-market
Turkey	❖ language & communications too difficult
Vietnam	❖ technical skills not there ❖ lack of semi-conductor infrastructure and educational infrastructure and lack of other companies

4. Give one or two example of manufacturing arrangements in developing countries that failed and the reasons why they failed.

<u>Country</u>	<u>Reason Failed</u>
China	❖ lack of export advantages ❖ lack of local materials base ❖ local government failed to deliver on tax credit promises
India	❖ poor infrastructure for communications, material logistics, poor management talent, unpredictable results, suspect business practices
Indonesia	❖ sold facilities due to - lack of engineers, cost of dealing with the govt, logistics
Phillipines	❖ sold to subcontractor - retrenchment
South Africa	❖ local market failed to develop ❖ labor costs relatively high ❖ lack of education needed to develop skills

III. Factors that influence entry into a developing country

For the following sections, please indicate on a scale of 1 to 5 how important each factor is in the decision to establish manufacturing arrangements in a particular developing country.

1= not at all important, 2=somewhat important, 3=important, 4=very important, 5=extremely important, AR - average response

A. Entry Criteria: Labor Force	AR	Not Important	→	Important
1. Unskilled labor costs and availability	3.13			
2. Skilled labor costs and availability	4.48			
3. Labor force turnover/stability	3.96			
4. Fringe and benefits costs	3.52			
5. Costs of in-house labor training	3.26			
6. Flexibility of labor regulations	3.83			
7. Power of unionized labor	4.04			
8. History of labor unrest or general strikes	4.43			
9. Local secondary education meets the needs of business	3.78			
10. Local university education meets the needs of business	3.96			
11. Prevalence of illness and disease among employees (e.g. AIDS)	3.05			
12. Adequacy of the country's healthcare system	3.09			
13. Other:				

B. Entry Criteria: Technical & Marketing Infrastructure	AR	Not Important	→	Important
14. Availability of technically skilled labor specializing in:	4.42			
A.				
B.				
C.				
15. Availability of export processing zones or "virtual EPZs"	3.70			
16. Supplies and raw materials are easily imported	4.30			
17. Supplies and raw materials must be available locally	3.00			
18. Overhead costs (land, rent, electricity, telecomm)	3.96			
19. Geographic proximity to market	3.26			
20. Geographic proximity to points on global supply route	3.78			
21. Cost of domestic freight from production to FOB	3.17			
22. Cost of international freight FOB-to-CIF US	3.61			
23. Power supplies are unreliable less than once a week	4.55			
24. Power supplies are unavailable once a week or more	4.61			
25. Telecommunications connections are unreliable	4.52			
26. New telecommunications hook-ups take a long time	4.35			
27. Transport from factory to port is unreliable	4.39			
28. Quality packaging is unavailable from domestic sources	3.26			
29. Quality packaging from domestic sources is expensive	3.26			
30. Sea freight is unavailable or infrequent to desired market	2.65			
31. Sea freight is costly	2.61			
32. Air freight is unavailable or infrequent to desired market	4.43			
33. Air freight is costly	4.26			
34. Road quality is poor or insecure	3.87			
35. Warehousing facilities are outmoded	3.17			
36. Port facilities are outmoded	2.78			
37. Customs clearance is cumbersome	4.30			
38. Ancillary services (marketing, accounting, packaging, etc) are weak or non-existent	3.14			
39. Other:				

C. Entry Criteria: Regulatory & Business Environment	AR	Not Important → Important
40. Availability of fast track permit process	4.00	
41. Presence of investment promotion center	3.43	
43. Personal lobbying by high-level local government officials	3.09	
44. Existence of a bilateral investment treaty with the U.S.	3.17	
45. Foreign ownership regulations	3.74	
46. Joint venture regulations	3.39	
47. Licensing regulations	3.70	
48. Host government makes regulatory or business environment commitments to the firm, such as:	4.43	
A.		
B.		
C.		
49. Availability of duty drawbacks, rebates, or exemptions for importing inputs	3.73	
50. Availability of bonded warehouses for importing inputs	3.82	
51. Government regulations are fully enforced	3.70	
52. Government regulations are not difficult to interpret	4.00	
53. There exists a dialogue between local business, labor and government	3.86	
54. Income inequality is high	2.87	
55. Domestic investment level in the country is high	3.09	
56. Domestic savings level in the country is high	2.70	
57. International banks are present	3.61	
58. Lending institutions do not make loans based on existing personal relationships	3.00	
59. Lending institutions service smaller firms	2.61	
60. Domestic interest rates are regulated	2.87	
61. Local banks are healthy with sound balance sheets	3.09	
62. Many international firms have a presence in this country	3.87	
63. The country is a democracy	3.50	
64. Country's diplomatic relationship with the U.S.	3.95	
65. Country's environmental regulations	3.52	
66. Competitors already manufacture in this country	3.30	
67. There is a viable market in this region for our final product	3.36	
68. Intellectual property rights are enforced	4.52	
69. Other:		


D. Entry Criteria: Tax Rates and Incentives	AR	Not Important → Important
70. Corporate turnover/sales tax rate	3.87	
71. Excise tax rate	3.74	
72. Corporate profit tax rate	4.26	
73. Import tax/duty rate on manufacturing inputs	4.39	
74. Export tax/duty rate on manufacturing outputs	4.39	
75. Employee payroll tax rate	3.43	
76. Employer payroll tax rate	3.61	
77. Personal income tax rate	3.13	
78. Tax holidays	4.00	
79. Opportunities for tax evasion	2.64	
80. Capital depreciation rules	3.73	
81. Level of inflation in foreign country	3.96	
82. Exchange rate stability in foreign country	4.26	
83. Convertibility of local currency	4.35	
84. Cost/availability of local investment capital	3.04	
85. Cost/availability of local working capital	3.22	
86. Reasonably priced export credits and insurance	3.43	
87. Investment protection schemes for foreign investors	3.65	
88. Foreign capital/profits repatriation regulations	4.22	
89. Dividend remittance policies	3.86	
90. Host government offers financial subsidies/incentives such as:	4.43	
A.		
B.		
C.		


91. Availability of insurance programs like OPIC	3.00	
92. Availability of investment guarantees	3.18	
93. Availability of U.S. tax incentives, such as:	4.00	
A.		
B.		
C.		
94. Availability of preferential trade agreements with U.S., such as:	3.42	
NAFTA		
CBI		
Other:		
95. Dual tax treaty	3.39	
96. Other:		

IV. Factors that determine exit from a developing country

For the following sections, please indicate on a scale of 1 to 5 how important each factor is in contributing to the decision to exit manufacturing arrangements in a particular developing country.

1= not at all important, 2=somewhat important, 3=important, 4=very important, 5=extremely important

A. Exit Criteria: Labor Force & Technical Infrastructure	AR	Not Important 	Important
1. Unskilled labor costs in the country rise significantly	3.41		
2. Unskilled labor costs elsewhere in the world fall significantly	2.95		
3. Skilled labor costs in the country rise significantly	4.05		
4. Skilled labor costs elsewhere in the world fall significantly	3.32		
5. Locals do not exhibit a strong work ethic	4.32		
6. We are prohibited from setting up training centers	3.67		
7. Local workers do not have sufficient education to benefit from further training	3.82		
8. The administrative burden of doing business is unusually high	3.82		
9. Hiring and firing practices are not flexible	3.77		
10. Local financing for working capital is not available	2.76		
11. Railway system is nonfunctioning	2.27		
12. Supply of electricity is unreliable	4.43		
13. Limited air transport infrastructure	4.39		
14. Water availability becomes scarce	4.23		
15. Overhead is costly (e.g. land, rent, electricity, telecommunications)	4.09		
16. Internet access is costly/unreliable	3.52		
17. Telecommunications and data services are unreliable	4.32		
18. Other:			

B. Exit Criteria: Regulatory & Business Environment	AR	Not Important 	Important
1. State interferes in private business	4.35		
2. Incompetence of personnel in the private sector	3.65		
3. Incompetence of personnel in the public sector	3.48		
4. Hidden import barriers (other than published tariffs and quotas)	4.00		
5. Costly to negotiate licenses, regulations, permits or tax assessments	4.18		
6. Citizens do not respect legal means of adjudicating disputes	3.82		
7. My firm is not able to file a lawsuit against the government at independent and impartial courts	3.64		
8. My firm is not able to file a lawsuit against other foreign or local private firms at independent and impartial courts	3.73		
9. The legal system failed to enforce contracts	4.09		
10. Government corruption imposes significant costs on business	4.43		
11. Organized crime imposes significant costs on business	4.52		

12. Petty crime and theft are widespread	3.87	
13. Rules, laws and government policy are continually changing	4.00	
14. The legal and political institutions are not stable	4.52	
15. The police are not effective at safeguarding personal security	4.43	
16. We feel that new governments will not honor obligations of previous regimes	4.17	
17. Civil unrest or war breaks out in a remote region of the country	4.26	
18. Civil unrest or war breaks out in the country's main urban centers	4.74	

V. We are interested in your opinion

1=Agree Strongly 2=Agree Somewhat 3=Disagree Somewhat 4=Disagree Strongly

	AR	Agree	Disagree
		1 2 3 4	1 2 3 4
1. The manufacturing capacity needs of my industry subsector are growing.	1.73	1 2 3 4	
2. Electronics assembly is the most feasible first step into electronics manufacturing for low-income countries outside of East Asia.	1.82	1 2 3 4	
3. Specific policies or incentive schemes such as tax holidays or export processing zones are unlikely to attract my firm to low-income countries.	2.43	1 2 3 4	
4. We would not consider establishing a manufacturing facility in a low-income country with no previously developed electronics manufacturing industry.	1.96	1 2 3 4	
5. Company restructuring or global business factors unrelated to a specific country's policies are very likely to affect our decisions to enter and exit developing countries	2.04		
6. We will be considering a manufacturing investment in Africa over the next five years.	3.52		

The question posed was the following: "Overall, please list the top 5 concerns you weigh when choosing:

Country in which to do business?	% Total	Partner firm with which to do business?	% Total
Infrastructure	18	Expertise	22
Political stability	17	Financial strength	15
Skilled labor cost & availability	17	Business philosophy	13
Proximity to customers & suppliers	16	Integrity	10
Tax incentives	10	New opportunities	9
Unskilled labor costs	3	Cost of business	6
Customs	3	Growing	6
Competitors present	2	Industry leadership	6
Work ethic of labor	2	Regional market access	4
Absence of local regulations	1	Proven track record	4
Crime	1	Language skills	3
Distribution network	1	International experience	1
Environmental policies	1	Top management strength	1
Quality of life	1		
Strategic objectives	1		
Total Number of Responses	195		195

Additional comments on any part of this survey and/or suggestions to USAID for industry-specific policies to encourage in low income countries:

- "training centers for employees are critical"
- "infrastructure is necessary before inward investment"
- "favorable expatriate financial treatment (tax)"

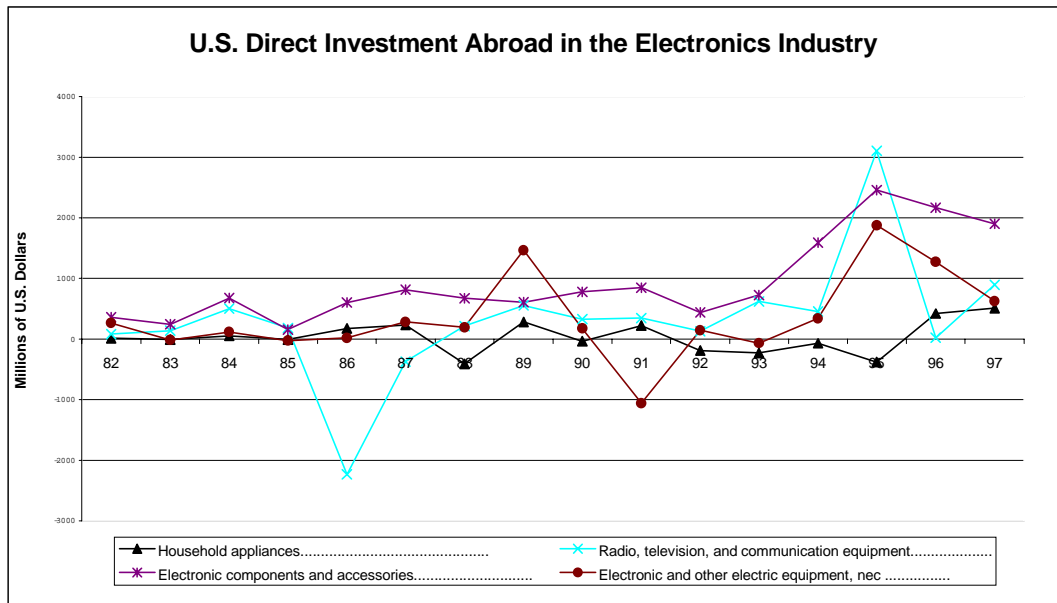
- "We will always look first at incentives to lower our cost and make it clear we are in for the long haul. We want to understand the infrastructure to support our business, from customs to training to power supply. We want to know our investments are secure and will be profitable."
- "In our industry, cost is King. We need the lowest cost subcontractors, while at the same time they must have a high level of technology. In our particular business we use packaging and assembly subcontractors. They must have the latest assembly."
- "Our company tends to invest where we can find high level engineering talent and where communications with the corporate offices in Santa Clara, California, is efficient. The communications required are high speed data transfer (T1 line), phone, fax, video."
- "Even if we wanted to put a manufacturing plant in South Africa, we couldn't staff it - people in the townships just don't have the math and science skills."
- "The perception is that Nigeria is so corrupt, it's impossible to do business there. It's also not safe. It seems to me that this will take generations to remedy."

Part II: Manufacturing Investment Survey

Country	Facility Type	Year Established	First Investment	Most Recent Investment	Total (\$ million) Cumulative Investment	Facility Still Operational?
China	Backplane Assembly	1998	1998	1999	2	yes
China	Equipment Manufacturing	1997	1998	1998	10	yes
China	Interconnect Manufacturing	1996	1998	1998	10	yes
China	Microcircuit Manufacturing	1998	1998	1999	15	yes
China	Personal Computer mfg.	1996	1996	1998	50	yes
China	Printer Manufacturing	1995	1996	1998	50	yes
China ¹	R&D for Manufacturing	1995	1996	1998	25	yes
Costa Rica	Assembly & Testing	1997	n/a	n/a	n/a	yes
India	Design Center	1997	1997	1998	10	yes
India	Design & Test Site	1997	1997	1998	5	yes
India	Microcircuits Manufacturing	1994	1996	1998	20	yes
Korea	Injection Molding mfg.	1997	1997	1998	2	yes
Malaysia	Assembly and Testing	1972	n/a	n/a	n/a	yes
Malaysia	Assembly, Mfg. & test	1985	1985	1998	200	yes
Mexico	Backplane Assembly	1998	1998	1999	4	yes
Mexico	Equipment Manufacturing	1996	1997	1998	20	yes
Philippines	Assembly and Testing	1972	n/a	n/a	n/a	yes
Philippines	Assembly of MR heads	1998	1998	1998	n/a	yes

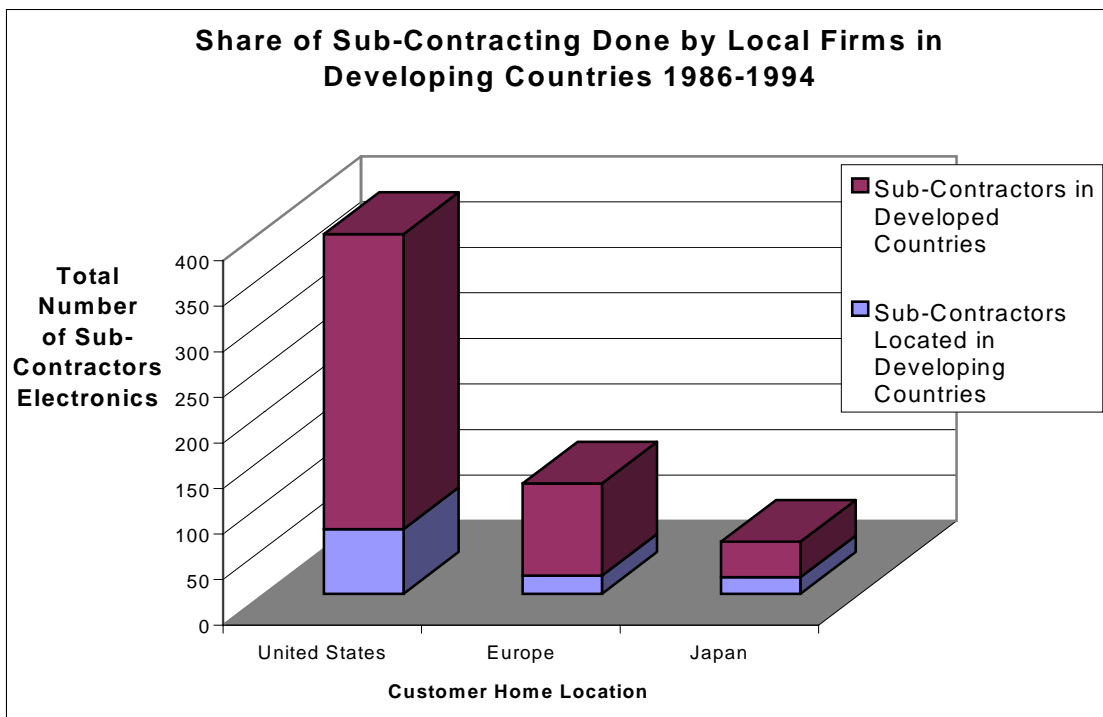
Philippines	Assembly & Test	1980			100	sold
Poland	PC Assembly	1992	1992	1998	10	yes
Singapore	Assembly & Test (CKTS)	1985	1985	1999	400	yes
Singapore	Wafer Fab. (ICs)	1997	1997	1999	300	yes
Singapore	Injection Molding & Design Mfg.	1997	1997	1997	2	yes
Singapore	Mfg./Assembly & Test	1975	1975	1998	400	yes
Singapore	Printer Manufacturing	1990	1990	1999	>1 billion	yes
Singapore	R&D printers	1990	1990	1999	>1 billion	yes
South Africa	PCB Manufacturing	1995	1995	1997	10	no
Taiwan	Test & Assembly	1991	1991	1995	80	yes
Taiwan	Package Assembly	1990	1990	1998	25	yes
Taiwan	Testing & Marketing	1988	1996	1996	40	yes
Taiwan	Wafer Manufacturing	1988	1996	1996	20	yes
Thailand	Assembly & Test (I. CKTS)	1985	1985	1998	200	yes
Thailand	Package Assembly	1992	1992	1998	50	yes
1. This firm reported investment in China as early as 1985 but not clear what for or dollar amount. n/a means not available because firm did not respond with this level of detail. Countries where investment in manufacturing facilities took place but no further detail was provided are Brazil, Hungary and Romania.						

Figure E.1



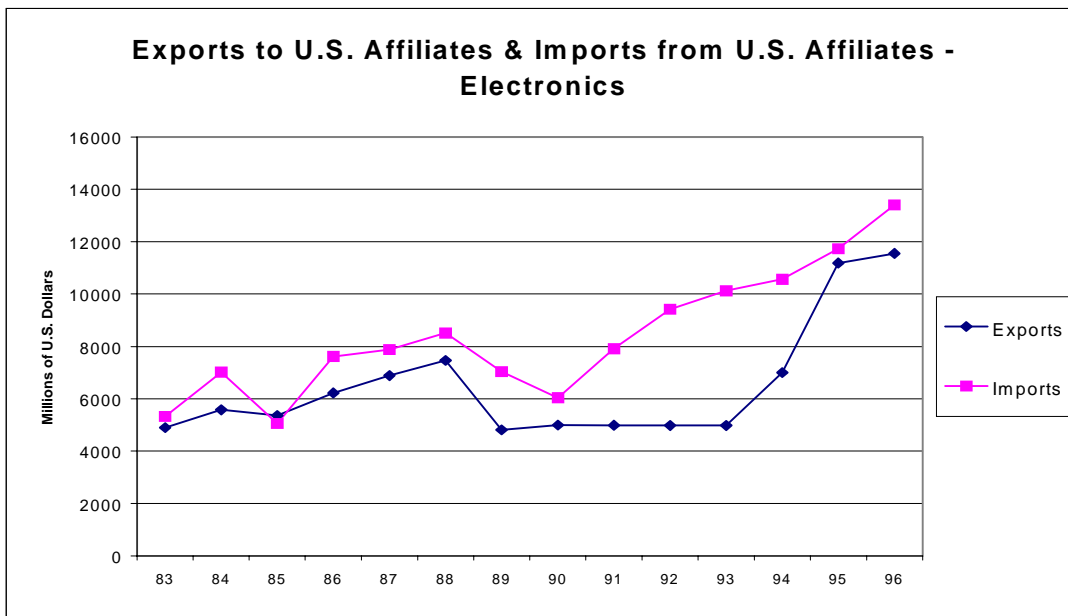
Source: United States Bureau of Economic Analysis

Figure E.2



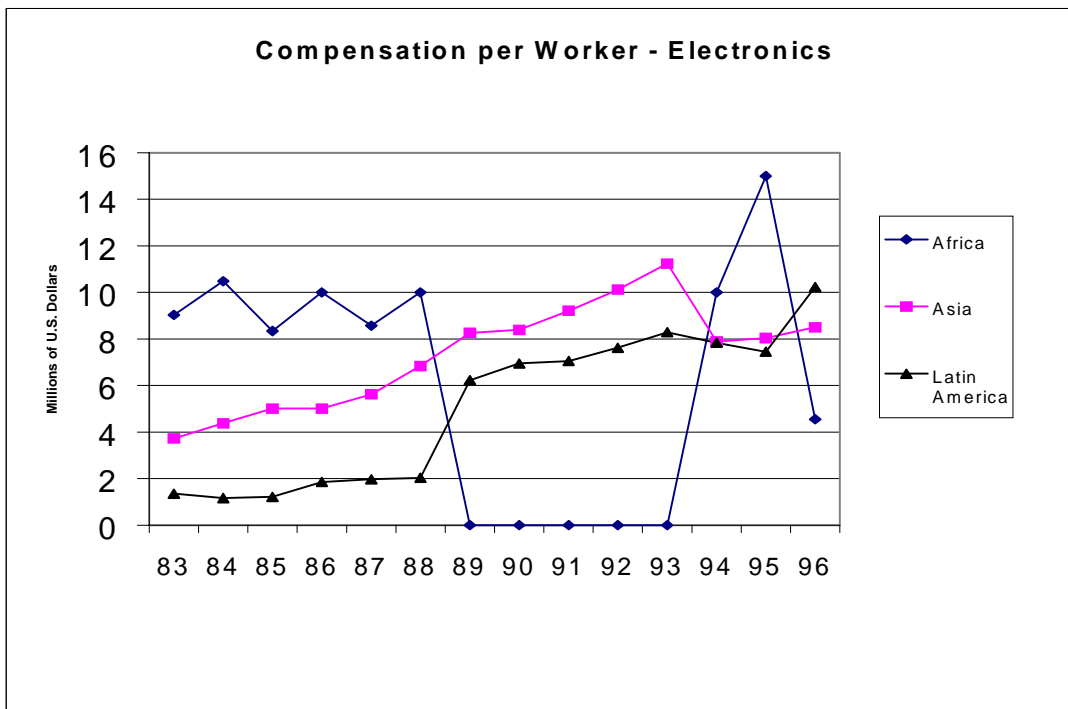
Source: Sturgeon, 1998

Figure E.3



Source: United States Bureau of Economic Analysis

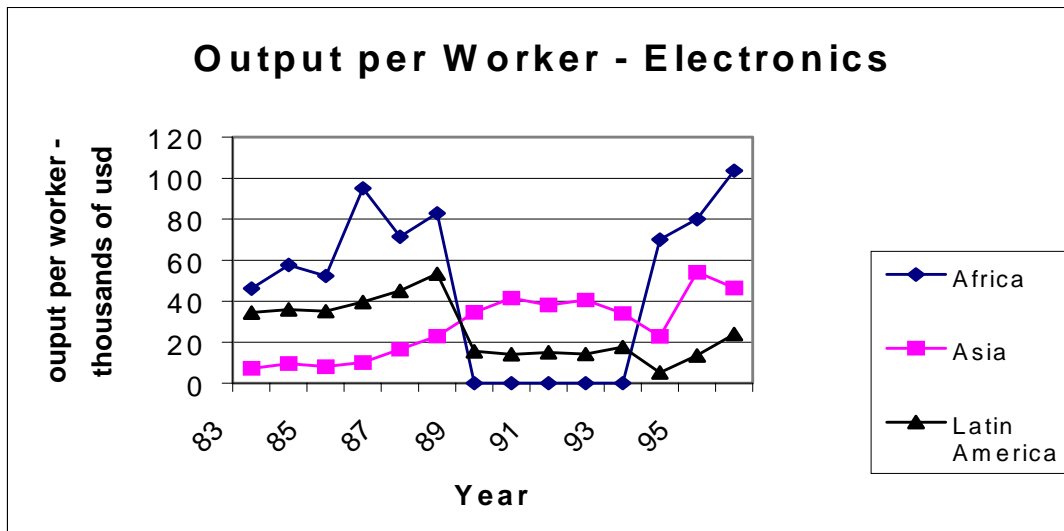
Figure E.4



Source: United States Bureau of Economic Analysis

Note: Africa includes only Nigeria and South Africa; data for 1989-1993 are missing

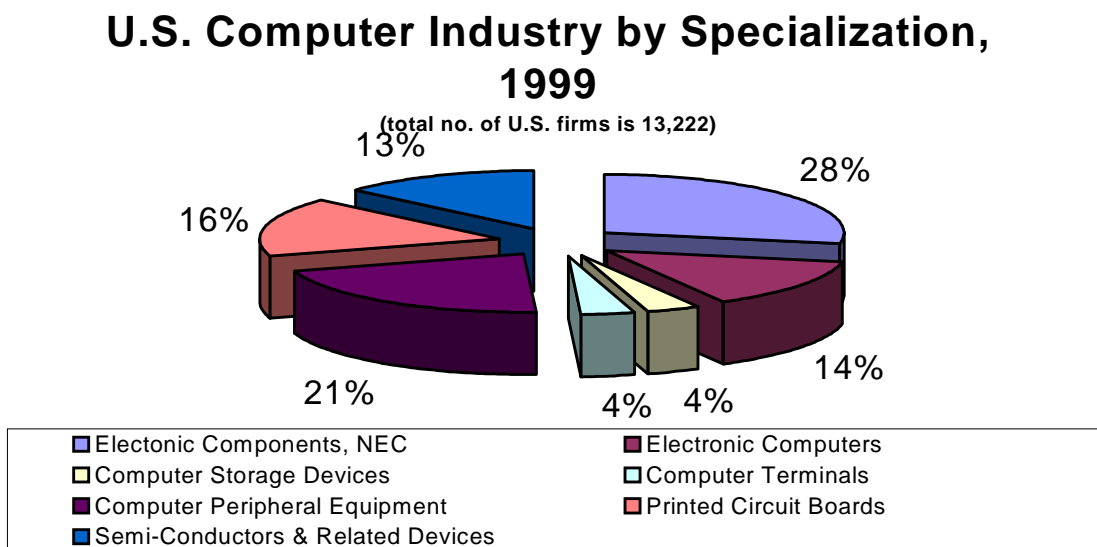
Figure E.5



Source: United States Bureau of Economic Analysis

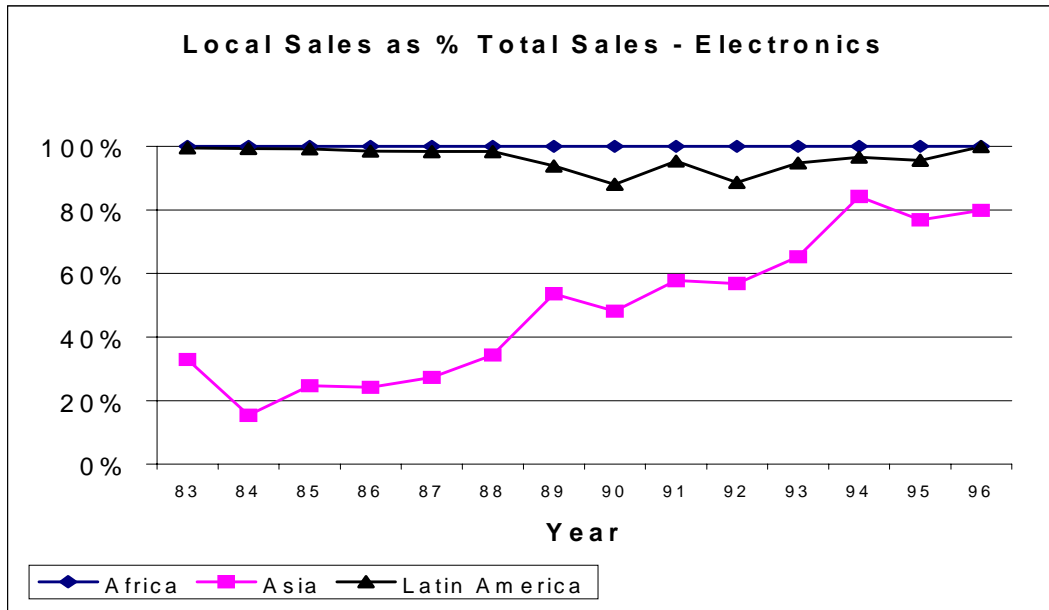
Note: Africa includes only Nigeria and South Africa; data for 1989-1993 are missing

Figure E.6



Source: Dun & Bradstreet, 1999

Figure E.7



Source: United States Bureau of Economic Analysis
Note: Africa includes only South Africa and Nigeria